State Agencies: S

Letter - S1. Signatory -Department of Forestry and Protection.

STATE OF CALIFORNIA—THE RESOURCES AGENCY GRAY DAVIS, Governor

DEPARTMENT OF FORESTRY AND FIRE PROTECTION
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November 12, 2002

Mr. Steve Thompson
California/Nevada Operations Manager
U. S. Fish and Wildlife Service
2800 Cottage Way
Sacramento CA 95825

Mr. Rodney R. McInnis
Regional Administrator
National Marine Fisheries Service
501 West Ocean Boulevard, Suite 4200
Long Beach CA 90802

Dear Mr. Thompson and Mr. McInnis:

In response to your request, the Department has reviewed the draft AHCP/CCAA for Simpson Resource Company. The Department's review of this plan has been limited to issues related to our statutory responsibilities as lead agency for review and approval of proposed timber operations on the covered lands. In review of Timber Harvesting Plan projects, the Department will only approve those projects that are in conformance with the Z'Berg-Nejedley Forest Practice Act, the rules of the Board of Forestry and other applicable state and federal laws.

Timber Harvesting Plans are expected to describe operational aspects of each proposed project and analyze the potential environmental impacts associated with project implementation. Where existing prescriptive Forest Practice Rule requirements will not reduce the potential of a proposed practice to less than significant, additional mitigations are developed and included in the Timber Harvesting Plan as enforceable operational measures.

The Department recognizes that approval of this HCP will exempt Simpson from specific sections of the Board rules, most notably 14 CCR 916.9 and 923.9, and will authorize "incidental take" on Simpson's covered lands. The documentation and findings associated with the HCP will assist the Department in responding to public comments and questions regarding "take" of the covered species and will provide a general operational framework to guide activities on the covered lands. However, the HCP itself does not authorize timber operations on Simpson's timberlands. Before projects can proceed, approval will need to be obtained from the Department through the state's regulatory process.

Response to Comment S1-1

Comment noted.

Response to Comment S1-2

Comment noted.

Response to Comment S1-3

The Operating Conservation Program will apply throughout the Plan Area, and is independent of the THP process. The Plan provides an additional layer of regulation that supplements all applicable laws and does not excuse Green Diamond from compliance with any of them.

The Services are not relying on CDF to enforce the Plan; instead, enforcement of the Plan measures will occur because they will be incorporated into THPs. Issuance of the Permits is not expected to create an additional enforcement responsibility for the Department, since the Department currently oversees compliance with all measures within any given THP. Decisions made by the Department on a THP-by-THP basis regarding any additional measures necessary to protect resources will not trigger additional Federal agency review. Federal approval of individual THPs would not be required. The Services may, at their discretion, comment on THPs. Finally, Green Diamond is responsible for compliance with the Plan, and the Services are responsible for pursuing actions related to non-compliance with the Plan provisions. See Master Response 14.1 (Services' involvement in the Plan's enforcement mechanism).

S1-1 While we concur with the general conclusion in 2.2.4 of the Draft EIS relative to imposition of additional mitigations necessary to protect covered species, we anticipate that the Department and other responsible state agencies will, on a site specific basis, propose mitigations which exceed the protection provided by the aquatic conservation measures. As lead agency, it will be the Department's responsibility to determine if the proposed mitigations suggested by the Review Team agencies are necessary to avoid a significant adverse impact. Also, as lead agency, it will be the Department's responsibility to insure that approved plans contain operational measures which are 1) clearly set forth and described in the plan, 2) comply with Board rules, 3) provide clear and enforceable language for operational elements, and 4) disclose the analysis supporting proposed mitigations and the logic trail supporting the project proponent's conclusion regarding the adequacy of proposed mitigations to avoid significant adverse impacts.

S1-2 Obviously, the HCP and associated EIR will provide a significant step in providing the basis for the conclusions regarding potential impacts to the listed species and will be useful in supporting the "Operating Conservation Program". It is the Department's position that Timber Harvesting Plans must contain specific operating mitigations in Section II of each THP which reflect the elements of the Operating Conservation Program applicable to that plan. Our expectation would also be that if the specific operating measure were an in-lieu practice, exception, or alternative practice under the Board rules, that appropriate documentation and support necessary to comply with Board rules would be provided.

S1-3 Based upon our review of the document, the Department requests clarification and direction regarding the following general concerns relative to our review process:

1. Clarification of which "Operating Conservation Program" measures will be included in each THP and how those measures will be included in specific Timber Harvesting Plans.
2. For those measures which the Department seeks to modify for reasons of clarity or enforceability, what level of modification can occur without triggering additional federal agency review? If the Department determines that modifications are more protective or are necessary to comply with other applicable state law, is this sufficient?
3. The level of individual Timber Harvesting Plan review participation by the federal agencies is not well defined. Will we need a sign-off on individual THPs from the federal wildlife agencies that the plan is in conformance with the provisions of the incidental take permit?
4. The role of the Department relative to enforcement of operating measures will be limited to enforcement of Timber Harvesting Plan provisions. Is this consistent with the federal agencies' intent with respect to determining compliance with HCP provisions?

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With these questions in mind the following attachment is intended to provide our analysis and concerns relative to specific operating measures in the HCP. In addition to your response to the more general questions listed above, we ask that you respond to each of these items individually. Your responses will help us to provide a timely and thorough review of each Timber Harvesting Plan. The issues raised in our specific comments should be viewed in terms of our need to have mitigations that are clear, conform to the rules, are enforceable, and provide adequate explanation or justification as necessary where in-lieus, exceptions or alternatives are proposed. We have included in the attachment 1) analysis of Section 6.1 and 6.2 which raises specific questions relative to various operating measures and, 2) analysis of definitions and terminology in 10.2 and the EIS Glossary. Our analysis of the operating measures has identified three operating measures which are not in conformance with the rules of the Board of Forestry and Fire Protection. These are 6.2.1.3 #2 Class II RMZ, 6.2.1.6.1 Class III EEZ and the definition of Watercourse Transition Line. Our analysis of the 10.2 Glossary and the EIS Glossary is intended to highlight inconsistencies in terminology and definitions and inconsistencies in content between the two sets of definitions, and to offer suggestions for additional terms which we feel should be defined.

We appreciate the opportunity to comment on these documents. Please advise if you have any questions.

Sincerely,

Ross Johnson
Deputy Director for
Resource Management

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Attachment

cc: Ms. Amedee Brickey
U. S. Fish and Wildlife Service
1655 Heindon Road
Arcata CA 95521

Mr. James F. Bond
National Marine Fisheries Service
1655 Heindon Road
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Mr. Tharon O'Dell
Simpson Resource Company
P. O. Box 68
Korbel CA 95550

Response to Comment S1-4

In AHCP/CCAA Section 6.3.1 it specifies that Class I designation will be given to a watercourse even if fish can only use the watercourse seasonally, which would include for purposes of migration and spawning. See response to Comment S1-109 for an explanation of the term "historical."

Response to Comment S1-5

The Services believe that any disputes regarding what constitutes "ample habitat" during Preharvest Inspections for purposes of the CFPRs would more appropriately be resolved under State law. Regarding dispute resolution, see IA Paragraph 13.6.

Response to Comment S1-6

EIS Table 2.7-1 has been revised to reflect current CFPR requirements for rocking of roads and landings during the winter period.

Response to Comment S1-7

EIS Table 2.7-1 has been revised to reflect minimum culvert size requirements under the CFPRs.

Response to Comment S1-8

Comment noted. The first column in EIS Table 4.1-1 has been revised to read "*HPA*."

Draft EIS:

S1-4 Section 2.2.3.1 Class I Watercourses: Defines Class I streams as all current or historical fish-bearing streams. Does "historical" mean "restorable" in the context of current rule 14 CCR 916.9(a)(6)(C), and 916.9(i)? Does "current or historical fish bearing stream" include habitat to sustain fish migration and spawning as defined in 14 CCR 916.5, Table I? How far back in time can one consider a historical fish bearing stream?

S1-5 Class II Watercourses: Defines Class II streams as providing habitat for aquatic vertebrate species. This is consistent with CDF policy memo's (Valentine 3/7/97, Lucke, 9/1/00), however, the definition may be too limiting without discussion of what constitutes ample habitat, and disputes may continue. We suggest including language in the AHCP definition that allows for dispute resolution, such as in the Lucke memo 9/1/00, page 2 item #4: "To resolve disputes which arise during PHIs, CDF may design seasonally and spatially appropriate surveys from which negative results would support the RPF's statement that the habitat is not habitat" [for non-fish aquatic vertebrate species].

S1-6 Table 2.7-1 page 2-53: States in the no action column that no specific requirements for enhanced surfacing of roads and landings during the winter period, yet 14 CCR 923.2(t) requires rocking to maintain a stable road surface throughout the period of use.

S1-7 Table 2.7-1 page 2-54: The no action column states no minimum culvert size requirements for Class II crossings, yet 923.3(a) requires specifying a minimum diameter, and 923.4(f) requires current sizing for a 50 year flood event, or to 100 year sizing if a new culvert is installed (923.3(e)).

S1-8 Table 4.1-1, page 4-7: Left column header should read HPA not HCP.

SRCo AHCP Volume 1, Section 6.1 and 6.2.

S1-9 6.1.2.1 One goal is to provide for the recruitment of LWD into streams. Does this include all streams, or certain classifications? A clarifying word or two here would help.

S1-10 6.1.2.2.1 The formula does not include units of measure for water temperature or watershed area. It appears that they are C° and acres, respectively. Defining these would provide clarity.

S1-11 6.1.2.2.2 The sentence "potential recruitment based on managed potential tree height will be greater than 80 and 70% attainment for Class I and II watercourses respectively" is unclear. 80 and 70% of what? How is the managed potential tree height used to evaluate this?

S1-12 6.1.2.2.3 The first biological objective for amphibians is in the present tense, but appears to be what is a desired future state. If this is a future objective, it should be in future tense. The second objective is unclear. 75 and 80% of what?

Response to Comment S1-9

As the Operating Conservation Program reflects, the requirement to retain and recruit LWD applies to all stream classifications where LWD would provide a benefit to the covered species. AHCP/CCAA Section 6.1.2.1 has been clarified as follows:

"Provide for the recruitment of LWD into all stream classifications so as to maintain and allow the development of functional stream habitat conditions."

Response to Comment S1-10

The interpretation of the formula presented in the comment is correct: water temperature is measured in °C and watershed area is measured in acres. The formula will be clarified in the Plan.

Response to Comment S1-11

See AHCP/CCAA Section 7.2.3.3.1.

Response to Comment S1-12

AHCP/CCAA Section 6.1.2.2.3 #1 has been modified as follows:

"Future ~~R~~results of paired sub-basin monitoring indicate that timber harvest activities have no measurable impact on populations of the covered amphibians."

The following clarification has been made to AHCP/CCAA Section 6.1.2.2.3 #2 on:

"*Estimates of the occurrence of tailed frogs and southern torrent salamanders will be at least 75 and 80 percent, respectively, in Plan Area Class II watercourses (Diller and Wallace 1996 and 1999)."*

Response to Comment S1-13

The first sediment objective of treating 46 percent of the road-related sediment from high and moderate priority sites within the first 15 years of the Plan and treating the remaining portion of high and moderate sites over the last 35 years of the Plan was based on the preliminary estimate of future sediment delivery (See AHCP/CCAA Section 6.3.3.2.5). The preliminary estimate of future sediment delivery from high and moderate sites from roads is 6,440,000 yds^3. When sites are treated, the entire site will be treated completely (not 46 percent of the site). The sediment objective does not relate to the percentage of sites that will be treated; rather, it is the estimated percentage of sediment volume from the sites that have high and moderate risk of future potential sediment delivery to watercourses.

Response to Comment S1-14

See Master Response 1 regarding baseline conditions. The Plan language will be revised as follows:

"The biological objective for monitoring and adaptive management will be to measures detectable changes in the ~~baseline~~ biological conditions so as to make appropriate adjustments to the Operating Conservation Program."

Biological goals, and their role in the Plan, have been discussed in Master Response 12. To clarify, revisions to the Operating Conservation Program are possible. See, for example, IA paragraph 9.0 and AHCP/CCAA Section 6.2.9 (changed

S1-13 6.1.2.2.4 The first sediment objective should result in reduction of road related sediment by at least 46%. How is this measured? 46% of current sediment delivery? At that site, or over the entire ownership? Or is it treatment of 46% of the sites?

S1-14 6.1.2.2.5 The monitoring objective is to measure changes in baseline conditions. What is baseline? Is it the current conditions, or "natural" conditions? Is baseline for each monitoring subject established? If not, do the monitoring guidelines provide a method for determining baseline? The rest of the sentence implies that changes can be made to the operational section to meet the plan's goals. Does this mean protections might be increased? How will this happen? How does this affect the "no surprises" provision (6.1.1, pg. 6-2)?

S1-15 6.2.1.2 It appears that since the one allowed RMZ harvest is to coincide with the even-aged harvest of the adjacent stand, no RMZ harvest is permitted when the intermediate treatments, such as a commercial thin, are conducted in the adjacent stand. If this is the intent, it should be stated.

S1-16 6.2.1.2.1 #3 The CDF protocol for overstory canopy measurement is to be used to determine compliance, apparently for the life of the HCP. Since this is 50 years, and the CDF protocol is liable to change, the current protocol should be included in an addendum for reference. Also, is this protocol something you want to commit to for 50 years? It is likely that better methods will be developed, a provision for changing protocols might be good to include.

S1-17 6.2.1.2.2 #2 Is the area where redwoods will be preferentially harvested the entire RMZ, or just where bank stability is a concern? This should be clarified for enforceability.

S1-18 6.2.1.2.3 Will compliance be based upon 14CCR 916.4(b)(2)? I.e. will RMZ be broken down into 200' lineal segments?

S1-19 6.2.1.2.3 #2 Is there a diameter consideration on the minimum 15 conifers per acre to be retained in the RMZ? Can they be 1"? If there is an intended minimum diameter, it should be stated.

S1-20 6.2.1.2.4 It appears that EVERY tree that can be defined as "likely to recruit" must be retained in the RMZ. Is that the intent? See next question below.

S1-21 6.2.1.2.5 How many of these factors are necessary for a tree to be likely to recruit? It doesn't appear that a tree has to meet all the criteria. Is meeting one criterion sufficient? If so, is every tree that is tall enough to reach the stream "likely to recruit"? This is most if not all of the trees in the RMZ. How these considerations are to be used should be clarified.

S1-22 6.2.1.2.7 Does this supercede the requirements set forth in 6.2.1.2.4? If so, it should be stated as such.

circumstances); IA paragraph 10.0 and AHCP/CCAA Section 6.2.6 (adaptive management). Where adaptive management is triggered, the biological goals and objectives will guide such management. (Regarding adaptive management, see responses to Comments C4-6, C4-29, G3-58, G3-59, G3-67, G3-72 through and including G3-77, G3-86, G5-2, G10-15, G10-49, G10-53, G10-51, and S5-32, among others). This approach is consistent with the No Surprises provisions of the Plan and IA. Regarding the No Surprises assurances, see Master Response 19.

Response to Comment S1-15

AHCP/CCAA Section 6.2.1.2 has been modified as follows:

"During the life of the Plan, Green Diamond will carry out only one harvest entry into Class I RMZs, which will coincide with the even-aged harvest of the adjacent stand. Green Diamond will apply the restrictions in this subsection of Section 6.2.1.2 during such entry. If cable corridors through RMZs are necessary to conduct intermediate treatments (e.g. commercial thinning) in adjacent stands prior to even-aged harvest, Green Diamond will apply the restrictions in this section except harvesting of trees in the RMZs will be limited to the cable corridors only. Any cable roads established in the RMZ as part of the intermediate treatment will, to the extent feasible, be reused during the even-aged entry into the adjacent stand. These Class I RMZs will be subject to the restrictions identified in Section 6.2.1.2."

Similarly, AHCP/CCAA Section 6.3.1.1.1 has be modified as follows:

"During the life of the Plan, Green Diamond will carry out only one harvest entry into Class I RMZs, which will coincide with the even-aged harvest of the adjacent stand. Green Diamond will apply the restrictions in this subsection of Section 6.3.1.1.1 during such entry. If cable corridors through RMZs are necessary to conduct intermediate treatments (e.g. commercial thinning) in adjacent stands prior to even-aged harvest, Green Diamond will apply the restrictions in this section except harvesting of trees in the RMZs will be limited to the cable corridors only. Any cable roads established in the RMZ as part of the intermediate treatment will, to the extent feasible, be reused during the even-aged entry into the adjacent stand. The minimum conservation measures within all Class I RMZs are described below. Where features of instability (as defined in Section 6.3.2 and Appendix B) are identified within or immediately adjacent to the RMZ, additional site-specific conservation measures for the identified area will be applied as well."

Response to Comment S1-16

Comment noted. The Plan includes a mechanism for modifying the Plan. See IA paragraph 12.0. The Services believe exercise of this provision will be sufficient to change protocols should such be desirable in the future.

IA Section 12.1.2(c) specifically calls out that changes in surveying, monitoring or reporting protocols are appropriate to be considered as minor modifications to the Plan.

Response to Comment S1-17

Measures will be applied to the entire RMZ unless specified otherwise. Plan enforceability is discussed in Master Response 14.

Response to Comment S1-18

Except for the exemption specified in CFPR Section 916.9 (x), Green Diamond will comply with all other applicable forest practice rules governing timber harvesting.

Response to Comment S1-19

The following change to 6.2.1.2.3 #2 has been made:

"No harvesting within the RMZ will be undertaken that would reduce the conifer stem density within the RMZ to less than 15 conifer stems per acre greater than 16 inches dbh per acre."

Response to Comment S1-20

See Master Response 5.

Response to Comment S1-21

See Master Response 5.

Response to Comment S1-22

The following language has been inserted at the end of ACHP/CCAA Section 6.2.1.2.7 (tree falling for safety purposes):

"*This measure supercedes AHCP/CCAA Section 6.2.1.2.4 (retention based on likelihood to recruit) when required by law.*"

Trees that are cut for yarding corridors within WLPZs are cut for reasons of safety and are required to be removed by Cal/OSHA under Title 8 of the California Code of Regulations Subchapter 13, Article 2, 6259. (a), which states: "All trees and snags which appear to be dangerous to any operation shall be felled. If hand falling presents extreme hazards, other methods shall be used." Felling of trees for safety is considered by the RPF who prepares the THP. This practice allows the Licensed Timber Operator (LTO) to fall trees that are not marked for removal by the RPF or his supervised designee. When marking trees to harvest in the RMZ, RPFs anticipate the possible need for the LTO to remove some unanticipated trees and leaves additional trees in the zone unmarked to compensate. When evaluating the removal of trees within yarding corridors, safety considerations are given priority over potential recruitment to the watercourse when no other feasible alternatives exist.

Response to Comment S1-23

The "existing roads" referred to in the comment are considered truck roads but may be used occasionally for skidding purposes (see AHCP/CCAA Section 6.2.4.5.3). However, existing skid roads will not be used in the RMZ except at designated watercourse crossing when necessary and identified in a THP as specified in AHCP/CCAA Section 6.2.1.2.8.

As indicated in the comment, there may be unique site-specific cases where the least damaging option for potential impacts to a watercourse would be to enter an RMZ with a skid trail. In response to this and other comments relating to equipment exclusion zones (see, e.g., Comments S1-20 and S1-35) Green Diamond has revised provisions of the Plan to reflect an exemption for the construction and use of skid trails and to clarify associated provisions relating to skid trail watercourse crossings. For each of the sections of the Operating Conservation Program noted below, these revisions also have been included in the corresponding subsections of AHCP/CCAA Section 6.3.

For Section 6.2.1.2.8 Equipment Exclusion Measures

~~The RMZ will be an EEZ, except for existing roads and landings, construction of spur roads to extend outside of the RMZ and watercourse crossings.~~

The Class I RMZ is an equipment exclusion zone (EEZ), except for 1) existing roads and landings; 2) construction of new spur roads to extend operations outside the RMZ; 3) road watercourse crossings; 4) skid trail watercourse crossings; and 5) designated skid trail intrusions. The exception for skid trail watercourse crossings is only applicable when the following conditions are

S1-23 6.2.1.2.8 Are the existing roads that may be reused in an RMZ only truck roads, or does it include skid roads? This should be clarified. Also, there should be a procedure for an exception to this restriction. There are situations where the least damaging option is to enter an RMZ, and this can be justified and explained site specifically. If there is no allowance for an exception, a more damaging option may have to be implemented to comply with the HCP. Inclusion of a procedure for an exception to this provision should be included.

S1-24 6.2.1.2.9 #3 This indicates that firelines will be built in the Class I RMZ which implies that burning will be conducted in the RMZ. Is this the intent? Why are the firelines not being built outside the RMZ? Will soil stabilization be applied to the burned area after burning? Why is the fireline exempt from the 100 square foot standard? A fireline can represent a large area of bare mineral soil. The other measures to be applied to hand-constructed firelines for sediment control should be listed. A timeline for treatment should be included.

S1-25 6.2.1.2.13 How does outer zone salvage address the other biological values of the LWD?

S1-26 6.2.1.3 Watercourse Orders are used to determine protection levels and are defined in Section 6.3 and in Section 2 of the EIS. Theses should be defined in section 6.2 or in the glossary.

S1-27 6.2.1.3 #2 A 70 foot RMZ may not be in compliance with the Forest Practice Rules, depending on the adjacent percent slope. How will compliance with the Forest Practice Rules be addressed? Section 6.2 should clearly state that the Forest Practice Rules, with the exception of the Threatened and Impaired Watershed rules, must be complied with, if they are the higher standard.

S1-28 6.2.1.4 Same concern as 6.2.1.2.

S1-29 6.2.1.4.3 Does the 200 feet apply to all Class IIs tributary to Class Is, or only above where the Class I changes to II in the same channel?

S1-30 6.2.1.4.5 As discussed in comments for 6.2.1.2.8 above, a procedure for an exception to the restriction is appropriate. This has been an issue especially for Class II RMZs around wet areas. A wet area should not need to be crossed in order to allow entry into the RMZ where such a practice will be less damaging than the alternative. It is also a concern for watercourses.

S1-31 6.2.1.4.6 #3 Same concern as 6.2.1.2.9 #3

S1-32 6.2.1.4.9 The no salvage zone for Class II watercourses is 30 feet. The no salvage zone for Tier B Class III watercourses is 50 feet (6.2.1.7.5). Is greater LWD retention for Class IIIs the intent?

met:

- Construction and use of skid trail watercourse crossings within the RMZ may occur only when construction and use of alternative routes to otherwise inaccessible areas outside of the RMZ would result in substantially greater impacts to aquatic resources. Preference shall be given to utilizing existing skid trail watercourse crossing sites in the RMZ over establishing new skid trail watercourse crossing sites in the RMZ.

- Skid trail watercourse crossings shall not be constructed or used in the RMZ to provide access to RMZs for the purpose of their harvest.

- Within the Class I RMZ, trees may be felled to facilitate skid trail watercourse crossing construction and use. All such felled trees will be retained as downed wood in the RMZ and will be counted towards estimated reductions in FTE values and reductions in potential recruitment of LWD.

- GDRCo will submit to the Services an explanation, justification, and map of any proposed skid trail watercourse crossings as part of the informational copy of the THP notice of filing (see Section 6.2.7.2).

The exception for skid trail intrusions is only applicable when the following conditions are met:

- RMZ hillslopes are less than 25%.

- Construction and use of skid trails within the RMZ may occur only when construction and use of alternative routes to otherwise inaccessible areas outside of the RMZ would result in substantially greater impacts to aquatic resources. Preference shall be given to utilizing existing skid trails in the RMZ over construction of new skid trails in the RMZ.

- Skid trails will not be constructed or used in the RMZ to provide access to RMZs for the purpose of their harvest.

- Within the RMZ, only trees less than 10 inches in dbh may be felled to facilitate skid trail use. All such felled trees will be retained as downed wood in the RMZ and will be counted towards estimated reductions in FTE values and reductions in potential recruitment of LWD.

- GDRCo has submitted to the Services an explanation, justification, and map of the proposed skid trail and use in the RMZ as part of the informational copy of the THP notice of filing (see Section 6.2.7.2).

For Section 6.2.1.4.5 Equipment Exclusion Measures

~~The RMZ will be an EEZ, except for existing roads and landings, construction of spur roads to extend outside of the RMZ and watercourse crossings.~~

The Class II RMZ is an equipment exclusion zone (EEZ), except for 1) existing roads and landings; 2) construction of new spur roads to extend operations outside the RMZ; 3) road watercourse crossings; 4) skid trail watercourse crossings; and 5) designated skid trail intrusions. The exception for skid trail watercourse crossings is only applicable when the following conditions are met:

- Construction and use of skid trail watercourse crossings within the RMZ may occur only when construction and use of alternative routes to otherwise inaccessible areas outside of the RMZ would result in substantially greater impacts to aquatic resources. Preference shall be given to utilizing existing skid trail watercourse crossing sites in the RMZ over establishing new skid trail watercourse crossing sites in the RMZ.

- Skid trail watercourse crossings shall not be constructed or used in the RMZ to provide access to RMZs for the purpose of their harvest.

- Within Class II-1 RMZs, trees may be felled and harvested to

facilitate skid trail watercourse construction and use. All harvested trees will be counted towards estimated reductions in FTE values and reductions in potential recruitment of LWD.

- Within Class II-2 RMZs, trees may be felled to facilitate skid trail watercourse crossing construction and use. All such felled trees shall be retained as downed wood in the RMZ and shall be counted towards estimated reductions in FTE values and reductions in potential recruitment of LWD.

- GDRCo will submit to the Services an explanation, justification, and map of any proposed skid trail watercourse crossings as part of the informational copy of the THP notice of filing (see Section 6.2.7.2).

The exception for skid trail intrusions is only applicable when the following conditions are met:

- RMZ hillslopes are less than 25%.

- Construction and use of skid trails within the RMZ may occur only when construction and use of alternative routes to otherwise inaccessible areas outside of the RMZ would result in substantially greater impacts to aquatic resources. Preference shall be given to utilizing existing skid trails in the RMZ over construction of new skid trails in the RMZ.

- Skid trails will not be constructed or used in the RMZ to provide access to RMZs for the purpose of their harvest.

- Within the RMZ, only trees less than 10 inches in dbh may be felled to facilitate skid trail use. All such felled trees shall be retained as downed wood in the RMZ and shall be counted towards estimated reductions in FTE values and reductions in potential recruitment of LWD.

- GDRCo has submitted to the Services an explanation, justification, and map of the proposed skid trail and use in the RMZ as part of the informational copy of the THP notice of filing (see Section 6.2.7.2).

For Section 6.2.1.6.1 Equipment Exclusion Zone

~~Simpson will establish a 30-foot EEZ (exceptions for the EEZ include watercourse crossings and existing roads).~~

Green Diamond will establish a 30-foot EEZ, except for 1) existing roads; 2) road watercourse crossings; and 3) skid trail watercourse crossings. The exception for skid trail watercourse crossings is only applicable when the following conditions are met:

- Construction and use of skid trail watercourse crossings within the Class III EEZ may occur only when construction and use of alternative routes to otherwise inaccessible areas outside of the RMZ would result in substantially greater impacts to aquatic resources. Preference shall be given to utilizing existing skid trail watercourse crossing sites in the Class III over establishing new skid trail watercourse crossing sites in the Class III.

- Within Class III EEZs, trees may be felled and harvested to facilitate skid trail watercourse construction and use.

- GDRCo will submit to the Services an explanation, justification, and map of any proposed skid trail watercourse crossings as part of the informational copy of the THP notice of filing (see Section 6.2.7.2).

For Section 6.2.1.7.1 Equipment Exclusion Zone

~~Simpson will establish a 50-foot EEZ (exceptions for the EEZ include watercourse crossings and existing roads).~~

Green Diamond will establish a 50-foot EEZ, except for 1) existing roads; 2) road watercourse crossings; and 3) skid trail watercourse crossings. The exception for skid trail watercourse crossings is only

applicable when the following conditions are met:

- Construction and use of skid trail watercourse crossings within the Class III EEZ may occur only when construction and use of alternative routes to otherwise inaccessible areas outside of the RMZ would result in substantially greater impacts to aquatic resources. Preference shall be given to utilizing existing skid trail watercourse crossing sites in the Class III over establishing new skid trail watercourse crossing sites in the Class III.

- Within Class III EEZs, trees may be felled and harvested to facilitate skid trail watercourse construction and use.

GDRCo will submit to the Services an explanation, justification, and map of any proposed skid trail watercourse crossings as part of the informational copy of the THP notice of filing (see Section 6.2.7.2).

Response to Comment S1-24

As stated in AHCP/CCAA Section 6.3.4.3 (Site Preparation Standards), the purpose of the conservation measures set forth in AHCP/CCAA Section 6.2.1.2.9 is to minimize surface erosion from site preparation operations. Specific conservation measures include: (1) prescribed fire operations are designed to produce burns of "low-intensity" where woody fuels 0.25 inch to 3.0 inches in diameter will be consumed, (2) non-targeted portions of the fuelbed such as the duff layer and fuels 3.0 inches in diameter are only lightly consumed, and (3) low intensity burns will tend to self-extinguish when they burn into a fireline or areas with overstory canopy.

It is a common practice to tie constructed firelines into vegetated strips like RMZs, EEZs and other unharvested areas. Firelines are not usually constructed prior to burning operations in watercourse protection zones and unharvested areas. Due to the implementation of conservation measures within the zones, these areas are generally well vegetated with forbs, brush species, and overstory canopy trees. Burns ignited outside of the protection zones or unharvested areas tend to back down to the edge of these areas and self-extinguish.

Firelines constructed by hand tools within an RMZ, are limited to the minimum necessary to contain the prescribed burn and are an unusual occurrence. When firelines are constructed in RMZ areas, they are located near the top of the zone above the maximum filtration capacity of the retained ground cover within the zone and their extent, with respect to length and width, is only enough to contain the edge of the burn.

The goal of the application of surface erosion control treatments to bare soil areas is prevention of sediment delivery to a watercourse. Due to the location, extent and character of hand constructed firelines within an RMZ, there is little likelihood that disturbance associated with the firelines will result in any significant risk to water quality including aquatic habitats. Where firelines are constructed within an RMZ (see AHCP/CCAA Section 6.2.4.2.8 #3), they *"...will have drainage structures that will minimize the movement of sediments from the exposed fireline surface...."* The most appropriate drainage structures for hand-constructed firelines are hand dug waterbreaks. All forestry personnel who have been trained in fire suppression techniques have been trained in the practice of installing waterbreaks in hand-constructed fire lines. With respect to the timing of the installation of the drainage structures in hand-constructed firelines, they are normally installed as part of the construction effort. In any case, the CFPRs [14 CCR 914.6(a)(1)] require all waterbreaks to be installed no later than the beginning of the winter period of the current year of timber operations.

Response to Comment S1-25

Without any indication of what the commenter considers "other biological values of the LWD," the Services are unable to provide a substantive response.

Response to Comment S1-26

Comment noted, but not incorporated. Information provided in AHCP/CCAA Section 6.3, including the definitions provided therein, is intended to guide interpretation and implementation of the provisions of the Operating Conservation Program set forth in AHCP/CCAA Section 6.2.

Response to Comment S1-27

See AHCP/CCAA Section 1.4.2 and Master Response 7.

Response to Comment S1-28

AHCP/CCAA Section 6.2.1.4 has been modified as follows:

"*During the life of the Plan, Green Diamond will carry out only one harvest entry into Class II RMZs, which will coincide with the even-aged harvest of the adjacent stand. Green Diamond will apply the restrictions in this subsection of Section 6.2.1.4 during such entry. If cable corridors through RMZs are necessary to conduct intermediate treatments (e.g. commercial thinning) in adjacent stands prior to even-aged harvest, Green Diamond will apply the restrictions in this section except harvesting of trees in the RMZs will be limited to the cable corridors only. Any cable roads established in the RMZ as part of an intermediate treatment will, to the extent feasible, be reused during the even-aged entry into the adjacent stand. These Class II RMZs will be subject to the restrictions identified in Section 6.2.1.4.*"

Similarly, AHCP/CCAA Section 6.3.1.2.1 #1 has be modified as follows:

"*During the life of the Permits, there will only be a single harvest entry into Class II RMZs, which will coincide with the even-aged harvest of the adjacent stand. Green Diamond will apply the restrictions in this subsection of Section 6.3.1.2.1 during such entry. If cable corridors through RMZs are necessary to conduct intermediate treatments (e.g. commercial thinning) in adjacent stands prior to even-aged harvest, Green Diamond will apply the restrictions in this section except harvesting of trees in the RMZs will be limited to the cable corridors only. Any cable roads established in the RMZ as part of the intermediate treatment will, to the extent feasible, be reused during the even-aged entry into the adjacent stand. The minimum conservation measures within all Class II RMZs are described below. Where features of instability (defined in Section 6.3.2 and Appendix B) are identified within or immediately adjacent to the RMZ, additional site-specific conservation measures for the identified area will be applied. At least 85% overstory canopy closure will be retained on the inner zone (0-30 feet). (Overstory canopy closure is defined and measured as with Class I watercourses above).*"

Response to Comment S1-29

The 200 feet applies to all Class II watercourses tributary to Class I watercourses.

Response to Comment S1-30

Comment noted. There may be unique, site-specific cases where the least damaging option for potential impacts to a watercourse would be to enter an RMZ with a skid trail. Regarding revisions and clarifications made to Operating Conservation Program provisions relating to EEZs, see the response to Comment S1-23.

Response to Comment S1-31

See the response to Comment S1-24.

Response to Comment S1-32

Greater LWD retention was not intended for Class III watercourses, but may or may not occur. Tier B Class III watercourses do not necessarily have more protection than Class II watercourses regarding salvage. Class IIs have two zones of restriction depending on the distance from the watercourse. No LWD may be salvaged from the 30-foot inner zone along a Class II watercourse. The LWD that can be salvaged in the outer zone (beyond 30 feet) of a Class II watercourse has to meet any one of the criteria for salvaging down material as listed in AHCP/CCAA Section 6.2.1.2.13. This section limits salvage of down wood to pieces that are not currently, and unlikely in the future to be, incorporated into the bankfull channel or are not contributing to bank or slope stability. Salvaging of LWD from within 50 feet of a Tier B Class III (AHCP/CCAA Section 6.2.1.7.5) is not allowed because of the steep slope of the ground near the watercourse. This conservation measure will avoid ground disturbance on steep slopes near Tier B Class III watercourses.

Response to Comment S1-33

The slope percent to be used for determination of Tier A compared to Tier B will be the average slope as measured with a clinometer, starting from the watercourse bank and running upslope for a distance of 50 feet. This distance is the maximum width of the EEZ for a Tier B Class III watercourse. In AHCP/CCAA Sections 6.2.1.5, 6.3.1.3.1 and 6.3.1.3.2, the parenthetical phrase, "(as measured with a clinometer)" has been replaced with, "(the average slope as measured with a clinometer, starting from the watercourse bank and running upslope for a distance of 50 feet)."

Response to Comment S1-34

The goal of the proposed measures that vary according to slope is to provide additional protection for Class III watercourses by applying greater EEZ widths and increased ground stability, where side slopes exceed a specific slope break, by retaining selected trees, where they exist prior to operations.

Response to Comment S1-35

See responses to Comments S1-23 and S1-30, and Master Response 7.

Response to Comment S1-36

The intent is to ignite controlled burns outside the EEZ. However, fire may encroach into the EEZ by back burning from the ignition point in order to reduce fire intensity.

S1-33 6.2.1.5 How are these slope percents measured? Is it an average? Over what distance? Or is it what is directly adjacent to the channel? Is 5 feet of 20% slope prior to 70% slopes enough to fall into Tier A? Is 5 feet of 70% prior to 30% slopes enough to fall into Tier B?

S1-34 6.2.1.6 Why are the measures for Tier A so different from Tier B with regards to hardwood and conifer retention?

S1-35 6.2.1.6.1 Same concern as 6.2.1.2.8 and 6.2.1.4.5. Also, this does not appear to be in compliance with the Forest Practice Rules (916.4(c)(1)) which require a 50 foot EEZ where slopes are greater than 30%. Is a 30 foot EEZ on 50 % slope sufficient protection?

S1-36 6.2.1.6.3 and 6.2.1.7.3 Does "not ignite fire" mean that fire will be lit outside the EEZ and allowed to back in, or no burn? Ignite needs to be defined. If the EEZ is no burn, specific protective measures, such as handline construction, should be included.

S1-37 6.2.1.7.4 #1 "Control point in the channel" should be defined.

S1-38 6.2.1.7.4 #2 Does the retention of one conifer per 50 feet of stream length apply to each side of the channel, or to the whole EEZ? If only one side is harvested (the watercourse is the unit boundary) is the standard one per 50 feet, or one per 100 feet with the expectation that the same will be done on the other side during a future entry? Is there a minimum size for the retention trees? This should be stated.

S1-39 6.2.1.7.5 – LWD definition in Section 10.2 is tied to "stream channel." It appears that the intent is to retain all down wood in the entire EEZ. The definition should be changed, or this section modified so as not to use the word LWD. Also, the EIS has a different definition of LWD.

S1-40 6.2.2.3.1 It appears that scarps and landslide toes that are more recent than 50 years are not included in the criteria. Is this the intent?

S1-41 6.2.2.4 Must the shallow landslide meet all three criteria to qualify for the protection measures? What does plan view mean in this context? Does directly to a watercourse mean the slide mass enters a watercourse? Does it exclude sediment that could be transported by runoff?

S1-42 6.2.2.6 #4 Who is required to flag the THP as containing alternatives to the default prescription? The RPF? Simpson?

S1-43 6.2.3.1.2 What format will the information be in? GIS? Or hard copy? Will this information be shared? With whom? In what time frame will the information be developed?

S1-44 6.2.3.1.3 #2 Is this data form already developed? If not, what information is required to be collected? Who has access to this database? In what format?

AHCP/CCAA Section 2.4.1 describes Site Preparation activities, including prescribed burning. This section describes scheduling of prescribed burning activities as well as the purpose of the activity.

Response to Comment S1-37

See response to Comment R1-71.

Response to Comment S1-38

The goal of the practice is bank stability. Therefore, because a watercourse has two banks, the practice would apply equally to both banks. Accordingly, the retention of one conifer per 50 feet of stream bank applies to each side of a Class III watercourse. No minimum size for the retention trees is specified in the Plan.

Response to Comment S1-39

As to the definition of LWD, see the response to Comment S1-124. The definition that is provided in the EIS has been used in the AHCP/CCAA.

Response to Comment S1-40

No. The phrase "within approximately the past 50 to 100 years" under both the first and second criterion is intended to include displacement or activity up to 100 years ago. To reduce confusion, the phrase in the two criteria in AHCP/CCAA Section 6.2.2.3.1 has been clarified as follows:

"…within approximately the past ~~50 to~~ 100 years…"

Likewise, ACP/CCAA Section 6.3.2.5.1 #1 and 2 have been modified as follows:

"…within approximately the past ~~50 to~~ 100 years…"

Response to Comment S1-41

Yes, AHCP/CCAA Sections 6.2.2.4 and 6.3.2.6 specify that all three criteria must be met for the prescription to apply. The "plan view" reference means the horizontal square area of the landslide when viewed from above, such as in aerial photographs, must be a minimum of 200 square feet. Sediment delivery "directly to a watercourse" does mean that the slide mass must enter the watercourse for it or any portion of it to be considered "delivered." Sediment that is transported from a landslide deposit by runoff to the watercourse may be considered surface erosion and not necessarily landslide-related sediment delivery, except possibly in some circumstances where a slide mass rests in a watercourse with its upper mass out of the water but eroding into the watercourse by way of surface runoff. However, a slide that is stabilized and contributing sediment to a watercourse via surface erosion will not necessarily be considered landslide-related. A slide mass that moves to and occupies a flood plain or CMZ is not necessarily delivered until the watercourse begins to act on (erode) that material. If landslide debris (sediment) sits in a flood plain or CMZ for a period of time such that it has time to significantly revegetate, it may be considered stabilized and not accounted for in terms of landslide-related sediment delivery.

Response to Comment S1-42

As the referenced provision provides, Green Diamond will be responsible for flagging the THP as containing alternatives to the default prescription.

Response to Comment S1-43

Initially the products from the aerial photo analysis will be in hard copy and eventually transferred to Green Diamond's GIS. Green Diamond has no plans to provide this information to the public; however, the aerial photo analysis will be used to help identify unmapped roads and to prioritize sites in the RWUs. Regarding a time frame for development of the information, the road assessment process will follow the RWU priority tables (AHCP/CCAA Section 6.2.3.1.1). The inventories of the

RWUs will precede implementation by no more than a few years (AHCP/CCAA Section 6.3.3.2.3).

Response to Comment S1-44

The data sheets that Pacific Watershed Associates uses for road inventories are the field form that the Green Diamond will utilize. Currently, Green Diamond has access to the database.

Response to Comment S1-45

The Services note that Green Diamond did not intend for the information in AHCP/CCAA Section 6.2.3.1.5 to be an exhaustive list but rather to provide examples of the types of information that will be included in the road prescriptions. However, armoring and diversion potential will be added to the list of examples in AHCP/CCAA Section 6.2.3.1.5.

Response to Comment S1-46

See AHCP/CCAA Section 6.3.3.2.4.

Response to Comment S1-47

The $2.5 million is not a ceiling - it is an average. See responses to comments addressing the $2.5 million: Comments G10-52, J1-66, R1-92, and R1-93. As discussed in the responses to Comments G4-27, G4-28, R1-49, R1-70, and S1-3, under the Plan, Green Diamond will still be required to comply with the CFPRs and to implement measures required by the California Department of Forestry and Fire Protection (CDF) as conditions of THP approval. Accordingly, where timber harvesting operations are involved, Green Diamond will be required to carry out any such measures independent of this provision in the Plan, although $2.5 million includes THP related work.

Response to Comment S1-48

Each un-inventoried RWU will have 15-20 percent of the roads inventoried for the 5-year assessment of future sediment yield. To ensure the road surveys are distributed around the watershed, 0.5-mile segments will be inventoried.

S1-45 6.2.3.1.5 The information needed list should include: need for armoring, diversion potential.

S1-46 6.2.3.1.6 How are these factors balanced? Are they given equal weight? Does high volume potential or impending failure have more weight than if these criteria are less severe? Define treatment cost-effectiveness. Dollars per yard saved might be a way to give cost effectiveness quantitative meaning.

S1-47 6.2.3.2.1 What happens if proposed THPs within the Klamath and Korbel working circles incur road related work requirements in excess of the 2.5 million dollar ceiling? Does all other needed repair or upgrade work stop?

S1-48 6.2.3.2.2 #2 For the 15 to 20% of roads to be sampled, is this 15 to 20% of the total road length? Or is it .5 miles of 15 to 20% of the road segments, regardless of length?

S1-49 6.2.3.2.3 These formulas are confusing. 1% of what? And how does that become years? The whole process needs to be better described.

S1-50 6.2.3.3.2 #1 "All watercourse crossings" should include "on decommissioned roads" as a qualifier for clarity.

S1-51 6.2.3.3.2 #3 Is the choice between original or stable angle whichever is steepest? Or is the stable angle only to be used where the original angle isn't stable? Stable angle isn't defined and isn't enforceable. A rise/run ratio could be a possible enforceable standard.

S1-52 6.2.3.3.3 Does "Unstable Areas" as used here only refer to road related instability? Or does it include geologic instabilities? It appears clear from the discussion in #1, but the title of this section should be modified for clarity.

S1-53 6.2.3.3.4 #3 Where is the outsloping not necessary? This should be defined for enforceability.

S1-54 6.2.3.3.4 #4 Where is ripping and planting appropriate, and where not? This should be defined for enforceability.

S1-55 6.2.3.4 Is upgrading, as described in this section, required on roads appurtenant to THPs? Or are the Forest Practice Rules the standard?

S1-56 6.2.3.4.2 #2 Define emergency situation.

S1-57 6.2.3.4.3 #2 Are uncompleted sites acceptable to leave untreated at the end of the day? How many sites can be in progress, and therefore uncompleted, during this time frame?

S1-58 6.2.3.4.5 #2 It appears that the word "drainage" should be inserted before the word "area" in the first sentence.

Response to Comment S1-49

One percent refers to 1 percent of the original estimate of future sediment yield from high and moderate sites, which is equivalent to 64,400 cubic yards. See AHCP/CCAA Section 6.3.3.2.5 for a more detailed explanation of the refined estimate of future sediment yield. Examples of possible adjustments also are provided.

Response to Comment S1-50

See response to Comment J1-68 for clarification of this text.

Response to Comment S1-51

Sloping back the side slopes of decommissioned watercourse crossings is not something that can be described with clearly defined enforceable language. The result is very site specific. The intent is to bring the side slopes to as close to the original grade as feasible or to a stable angle (often believed to be a 2:1 or 50 percent slope). However, there are cases where the original side slopes are much steeper yet perfectly stable when compared to a defined "stable angle" of 50 percent slope. Furthermore, there are cases where the defined "stable angle" is too steep to be considered stable for some watercourse crossings. Because of these situations and the very site-specific nature of road decommissioning, having "one size fits all" language for this measure is not appropriate and therefore not used in this case.

See Master Response 14, regarding Plan enforceability.

Response to Comment S1-52

AHCP/CCAA Section 6.2.3.3.3 refers to road related unstable areas associated with road decommissioning. The heading for AHCP/CCAA Sections 6.2.3.3.3 and 6.3.3.5.4 have been clarified as follows: "Road-related Unstable Areas".

Response to Comment S1-53

Typically cross-road drains can be constructed at frequent intervals to adequately drain the road. There may be site specific circumstances where outsloping may be required to drain a low spot along a road as opposed to constructing cross-road drains. The proposed language provides Green Diamond flexibility to address site-specific conditions while decommissioning roads.

See Master Response 14, regarding Plan enforceability.

Response to Comment S1-54

The option to rip and plant would be at Green Diamond's discretion. Each road to be decommissioned or abandoned is a unique situation, in fact, separate segments of a road to be decommissioned may need to be treated differently. The practices of ripping and planting are two separate functions that result in two different results. Ripping may be applied where necessary to break up the road surface to improve infiltration, reduce concentrated runoff and reduce compaction. The purpose of tree planting is to utilize the road surface for timber production. Ripping and planting are meant to be an optional practice that may be applied by Green Diamond in addition to the required practices listed in AHCP/CCAA Section 6.2.3.3.4 #1 through #3.

Response to Comment S1-55

Any road upgrading projects conducted within the Plan Area (including roads appurtenant to THPs) will follow the road upgrading standards outlined in AHCP/CCAA Section 6.2.3.4 and the prioritization tables identified in AHCP/CCAA Section 6.2.3.1.1.

Response to Comment S1-56

The term "emergency situation" is defined in AHCP/CCAA Section 6.2.3.12 as any site that poses an imminent threat to life, property, or public safety, or a potential for a massive sediment input with catastrophic environmental consequences. A reference to this section will be added to AHCP/CCAA Section 6.2.3.4.2 #2 for clarity:

"Sites that require multiple days for completion will not be started during the winter period unless there is an emergency situation. A situation is an 'emergency' for the purpose of this section if the elements

of Section 6.2.3.12 are satisfied."

Response to Comment S1-57

Yes, it would be acceptable to leave uncompleted sites untreated at the end of the day. The provisions provided for work to occur during the "early spring drying" period is no measurable rainfall has occurred within the last 5 days and no rain is forecasted by the National Weather Service for the next 5 days. First, rain events during this time of the year generally are infrequent and usually only consist of light showers. Second, the likelihood of rain-related effects on the work site would be low, given the 5-day forecast. The Services belive that 5 days would allow sufficient time to complete a site plus install the necessary erosion control measures upon site completion. There is no limit to the number of these sites that can be in progress; however each contractor or company crew will be responsible for the completion of each site during this time period

Response to Comment S1-58

The word "drainage" was inadvertently omitted in the draft. AHCP/CCAA Section 6.2.3.4.5 #2 has been modified as follows:

"The design flow will be calculated using the Waananen and Crippen (1977) method for drainage areas greater than or equal to 80 acres. The Rational Method (Chow 1964) will be used when the drainage area for a crossing is less than 80 acres."

Response to Comment S1-59

See response to Comment J1-71, regarding revision and clarification of AHCP/CCAA Section 6.2.3.4.5 #4.

The abbreviation "HW" and definition of "headwater depth" will be added to AHCP/CCAA Section 10.1 and 10.2, respectively, as follows:

"Headwater depth: The vertical distance from the bottom of the culvert at the inlet to the water surface of the pool."

A smaller headwater depth to culvert diameter ratio does not necessarily mean that there is less fill material over the culvert. The ratio depends on how the crossing was originally designed and constructed. At present and proposed within the Plan, Green Diamond sizes culverts for a 100-year flow event (AHCP/CCAA Section 6.2.3.4.5). The culvert diameter is selected on the basis that the culvert will pass the design flow without submerging the culvert inlet. Currently, a headwater depth to culvert diameter ratio (HW/D) of 1.0 is used when sizing the culvert. Green Diamond does not account for the depth of the fill material above the culvert in the equation for determining the culvert size to accommodate the design flow. The depth of the fill material above the culvert is used as a factor of safety to accommodate for sediment and/or debris.

An inlet control nomograph for corrugated metal culverts is used to adjust the capacity of a culvert by incorporating the depth of fill material over the culvert into the actual design of the crossing. A headwater depth to culvert diameter ratio greater than 1.0 would allow a culvert with a smaller diameter to still accommodate the

S1-59 6.2.3.4.5 #4 Does the culvert need to meet both criteria to be replaced? Headwater depth should be defined. Based on the instructions for use of the culvert capacity nomograph, a smaller headwater depth to culvert diameter ratio means that there is less fill over the culvert. In which case, if the ratio is large enough that the culvert does not need to be removed under this provision, there is a larger amount of fill, and thus a larger potential sediment input. Is this the intent? Is the intent that the excess water will back up behind the fill like a dam? Since the way this provision is written both criteria are required for replacement, a culvert could be significantly undersized (more than 15%) and not have to be replaced because of the large fill, increasing the potential delivery, if the fill should fail.

S1-60 6.2.3.4.8 When is it necessary, or not necessary, to reshape the existing road bed? The desired condition, proper surface drainage, should be defined.

S1-61 6.2.3.5.3 When can the normal width be exceeded?

S1-62 6.2.3.5.7 #2 This should have a discussion of distances between roads relative to feasible cable yarding distances. Midslope roads may be necessary to accommodate cable settings, where the "feasible" criteria could be questioned.

S1-63 6.2.3.5.9 as noted before (6.2.1.6.1, 6.2.1.2.8, and 6.2.1.4.5.), there should be a provision for an exception to this limitation.

S1-64 6.2.3.5.10 (#3) – "Administrative purposes" is not defined. Other landowner's accessing Simpson roads and other "permittees" are not apparently constrained by this rule. I.e. hunters, firewood cutters, other landowners hauling across SRCO lands.

S1-65 6.2.3.5.16 #2 For early spring road upgrading, is October 15th early enough for treatment? This should probably be done shortly after placement, and maintained, so that if there is a late rain the material won't be exposed.

S1-66 6.2.3.5.18 Most roads will be built with some fill, and other portions of the HCP clearly indicate an intent to outslope (e.g. 6.2.3.5.18 and 6.2.3.5.21), but this section suggests insloping where there are fills. What is the intent?

S1-67 6.2.3.5.22 #2 The way this reads, turnouts will be full bench construction. Is that the intent?

S1-68 6.2.3.6.1 This standard is not enforceable as written.

S1-69 6.2.3.6.2 #4 Under what circumstances can this substitution be made? At any time, or does it require approval from the agencies?

S1-70 6.2.3.6.6 #1 This standard is not enforceable as written except in hindsight.

S1-71 6.2.3.7.4 Minimization of sidecast should have an enforceable standard.

100-year flow; however, in this design the water is allowed to rise above the top of the culvert. Using the criteria outlined in AHCP/CCAA Section 6.2.3.4.5 #4 (modified as indicated in response to Comment J1-71) the stream crossing would meet or exceed the 100-year flow even though it would not meet the current design standards outlined in the Plan.

Response to Comment S1-60

Green Diamond is likely to apply AHCP/CCAA Section 6.2.3.4.8 to reshape roads where there is inadequate road surface drainage. In some cases, localized outsloping may improve the road surface drainage. Some roads also may have developed outside berms which could be pulled and reshaped to improve surface drainage.

Response to Comment S1-61

Article 12 of the CFPRs contain rules that apply to road construction. Specific road construction rules require specialized construction techniques on steep slopes, minimum useable road widths, rules addressing handling of organic materials created by construction activities, drainage structure specifications, and a prohibition on creating overhanging embankments. The only reason for expanding the clearing width beyond the 100 foot limit would be to allow for specialized construction techniques required by the CFPRs or for specialized construction techniques agreed to in response to recommendations from reviewing agencies during THP review.

Response to Comment S1-62

Road location is a direct function of topographic constraints and key control points, whereas road spacing is a function of topography, control points and yarding equipment capability. This may be a subtle differentiation yet it is key to the concept that topographic constraints and limitations should dictate designed road spacing, not current yarding equipment constraints or limitations.

Modern mobile cable yarding equipment does not generally have the long reach capability that was common when the original old growth timber stands were harvested. The original cable yarding systems where large ‘tower’ configuration yarders with reach capabilities out to 3,000 feet where large ‘half to full circle’ clearcut settings were the norm. Modern cable yarding equipment is generally designed for reaches in the 800-foot to 1,000-foot range. These small mobile yarders trade size for flexibility. For most modern cable yarding operations, road turnouts, road junctions and small landings are used instead of 1/4 to 1/2 acre constructed landings. Many of the modern cable yarders have ‘swing’ capabilities where logs can be landed right on the road, which serves as a functional ‘continuous landing’. Average road spacing for harvesting young growth timber stands on moderate to gentle ground is generally laid out on a 700-foot to 800-foot average spacing. This spacing balances functional and economic yarding distances for both cable and ground based yarding systems.

Where steeper topography exists and good mid-slope control points (i.e.: landing locations, stream crossing locations) are lacking, utilization of longer span skyline cable systems are dictated. Longer span skyline yarding systems (usually over 1,200 feet and up to 2,500 feet yarding distances) allow for roads and landings to be located on ridge tops or main benches where construction would cause significantly less overall soil disturbance. Shorter road spacing on steep slopes that is specifically designed to accommodate short reach cable yarders is not preferred because it does not take in to consideration the opportunity to avoid steep and/or unstable topography with the inherent higher risk road construction implications. Green Diamond utilizes both short and long span skyline cable yarding systems where topography and roading constraints warrant their specific inherent benefits.

Another factor that affects road spacing design is harvest unit size. Under the FPRs, regeneration harvest unit size is limited to 30 acres for cable yarding methods with a maximum of up to 40 acres with adequate justification. Units to be yarded by ground-based methods are generally limited to a maximum of 20 acres. In reality, most even-aged cable yarding harvest units are less than 30 acres in size and most tractor yarding harvest units are less than 20 acres in size. The small size of the harvest units reinforces the use of average road spacings of 700-foot to

800-feet where gentler slopes and topography allow so that logical harvest units can be developed.

With the general limitations on using ground based yarding methods on steeper slopes (AHCP/CCAA Section 6.2.4.5.2), new roads tend to be located higher on the slope to facilitate expanded use of both short and long span cable yarding systems in comparison to past harvesting systems. Location of new roads up and away from watercourses and on stable slopes is expected to result in a reduced risk to water resources including aquatic habitats.

Response to Comment S1-63

See response to Comment S1-23.

Response to Comment S1-64

"Administrative purposes" are all the activities not included in 'harvesting', which is defined in AHCP/CCAA Section 10.2. Where timber harvesting activities are all related to cutting and removal of timber products, 'administrative purposes' activities include all the land management activities not directly associated with harvesting operations like timber inventory, resource protection (burning), reforestation, security, wildlife surveys, watershed work, etc.

The prohibition on the use of non-rocked roads by vehicles in the winter period applies to all activities controlled by Green Diamond.

Response to Comment S1-65

Yes, the Services believe that October 15th is early enough. AHCP/CCAA Section 6.2.3.5.16 #2 does not address placement of excess material in the early spring because no road construction is allowed during the winter period, including from October 16th through May 14th. After May 14th, the rainfall pattern in the Plan Area diminishes to a system of light infrequent showers. AHCP/CCAA Section 6.2.3.5.16 #1 requires deposition of excess material in a "stable location where sediment will not deliver to any watercourses." The location of the deposited excess materials and the timing of the deposition will prevent any significant risk to water resources.

Response to Comment S1-66

AHCP/CCAA Section 6.2.3.5.18 addresses construction techniques for segments of roads where fills are involved. AHCP/CCAA Sections 6.2.3.5.11 through 6.2.3.5.17 address road construction requirements including construction specifications (See AHCP/CCAA Section 6.2.3.5.8 #2.). 'Fill construction' refers to road segments that are entirely constructed of fill materials. Examples of fill construction would include a through fill over a depression in the topography or a culvert fill. Through fills not associated with a culvert crossing are a rare occurrence on forest roads and usually associated with roads on flatter ground. Through fills, including culvert crossing fills, are typically insloped so that water will run off to an inside ditch where it can be routed to a ditch relief culvert or watercourse crossing culvert.

Response to Comment S1-67

AHCP/CCAA Section 6.2.3.5.22 #2 specifically prohibits turnout construction where fill would have to be placed on a side slope in order to construct a road turnout. In cases where fill would be required on a side slope, turnouts would be avoided or constructed on the inboard side of the road.

Response to Comment S1-68

See Master Response 14 regarding Plan enforceability.

Response to Comment S1-69

AHCP/CCAA Section 6.2.3.6.2 #4 provides for substitution of an alternative flow design estimation method, in the future, as long as the new method is comparable. "Comparable" in this instance means that the new method would estimate discharge values similar to current methodologies. This substitution does not require approval from the Services.

Response to Comment S1-70

See Master Response 14. The conservation measure to install erosion protection measures at inlets and outlets of culverted watercourse crossings is a standard practice that is utilized on Green Diamond's

timberlands in California. The CFPRs (14 CCR § 923.2(o)) require placement of energy dissipaters where drainage structures and drainage facilities on logging roads would discharge onto erodible fill or other erodible material. A description of suitable energy dissipaters is found in CFPR 14 CCR 914.6(f). The California Department of Forestry and Fire Protection (CDF) conducts Pre-harvest Inspections, Active Inspections, and Post-Harvest Completion Inspections of timber harvesting activities and may conduct additional inspections of roads under an extended road maintenance period of at least one year and up to three years after Plan completion.

Concerns about discharge of specific culverts can be addressed by incorporation of specific mitigation measures in the approved THP. All watercourse crossing installations must comply with an approved Streambed Alteration Agreement with the California Department of Fish and Game (DFG) under Public Resources Code section 1603. Inspections by CDF during active operations check the condition of installed crossing culverts for compliance with the CFPRs and AHCP/CCAA conservation measures that are incorporated in the Plan. Final Completion Inspections and follow up Maintenance Period Inspections also check for compliance with CFPRs and Operating Conservation Program measures. Inspections by DFG following completion of culvert installations on watercourses check for compliance with the Section 1603 Agreement. In all cases, the landowner must correct any non-compliance with THP, CFPR or Section 1603 Agreement requirements.

Response to Comment S1-71

See Master Response 14 regarding Plan enforceability. Landing construction on steep slopes is to be avoided according to AHCP/CCAA Section 6.2.3.7.2 #2. Where new landing construction is necessary on slopes greater than 65%, no fill is allowed (full bench construction required). The enforceable standard used by CDF is the same as the standard for which surface erosion control treatments are required. Specifically, sidecast or fill material extending more than 20 feet in slope distance from the outside edge of the roadbed. Any sidecast less than that described above would be considered minimized.

Response to Comment S1-72

Yes. The proposed practice to seed and mulch waste material, even when deposited in a stable location, will provide for surface erosion protection of the materials. It is presumed that surface erosion protection measures will lead to water quality protection, even when a direct threat to water quality is not apparent.

Response to Comment S1-73

The Operating Conservation Program does not include a prescription to minimize or treat sidecast for slopes greater than 50 percent up to 65 percent. The selection of specific prescriptions is a matter of the Permit applicant's discretion (HCP Handbook at 3-19). The Services' role during the development of a conservation program is to "be prepared to advise," and to judge its consistency with the ESA approval criteria as a whole once the application is complete (HCP Handbook at 3-6 and 3-7). The ESA does not require that any particular measure be adopted or imposed, but only that its criteria for Permit issuance be met. Issuance criteria have been discussed in AHCP/CCAA Section 1.4.1, EIS Section 1.3, and Master Response 8. The Services believe, based on the analysis provided in the Plan and EIS, that implementation of the Operating Conservation Program meets ESA requirements.

Response to Comment S1-74

The term 'close proximity' is used in the context of association with watercourses. The focus of conservation measures is protection of water resources including aquatic habitats; therefore the additional protection measures to trap sediment and minimize

S1-72 6.2.3.7.5 #2 Does the waste material need to be seeded and mulched even if it is in a stable location where it doesn't have access to a watercourse?

S1-73 6.2.3.7.6 #1 What about on slopes between 50 and 65%? 6.2.3.7.4 addresses slopes over 65%

S1-74 6.2.3.8.2 What constitutes "close proximity"? This is not enforceable and is subject to interpretation.

S1-75 6.2.3.8.3 #2 Does "projects associated with" mean those requiring mulching? It would be clearer to use a more definitive term.

S1-76 6.2.3.8.5 #2 How far up the road is the mulching and seeding required? Is this for just where the crossing fill was, or up to the first waterbar, or to the edge of the EEZ?

S1-77 6.2.3.9.2 #1 How big is a patch? This should be defined for enforceability.

S1-78 6.2.3.9.4 #2 "Rotating annual schedule" should be defined or clarified. It appears that the intent is for the 1s to be done in the first year, the 2s in the second, and back around to the 1s in the fourth year.

S1-79 6.2.3.9.5 #2.c The first "that" appears to be a typo.

S1-80 6.2.3.9.5 #2.d The proper functioning of culverts is difficult to assess with a "drive through", but the inspection procedure appears not to include getting out of the truck and looking into the culverts. How is this going to be adequately assessed? Also, "functioning properly" needs to be defined with enforceable standards.

S1-81 6.2.3.9.5 #3 Define priority as used in this context. Does it mean high priority only, or does it include medium and low priority as well?

S1-82 6.2.3.10.1 Why will only rocked roads be inspected? Failures can occur on seasonal roads as well. Seasonal roads can be inspected by ATV or on foot without damaging the road.

S1-83 6.2.3.10.3 If commercial timber operations are involved with the daylighting, it must be tied to a THP rather than a general HCP measure.

S1-84 6.2.3.10.3 #1 The definition of daylighting should be included here, especially the expected width of daylighting.

S1-85 6.2.3.11.4 Regulation of other landowners using the Simpson road network needs to be addressed; specifically, permittees such as woodcutters, hunters, etc. SRCo. Biologists may also

its entry into watercourses would be applied within the RMZ or EEZ where some risk to water resources could exist. See Master Response 14 regarding enforceability.

Response to Comment S1-75

The phrase 'associated with' in AHCP/CCAA Section 6.2.3.9.3 #2 refers to seeding and mulching of areas of exposed soil related to road and landing construction that could generate suspended or mobilized sediment that would have access to a watercourse. AHCP/CCAA Section 6.2.3.9.3 #2 has been clarified as follows: "By October 15th, all waterbars, rolling dips, and road and landing construction associated with straw mulching and grass seeding will be completed in order to minimize suspended or mobilized sediment delivery to a watercourse."

Similarly, AHCP/CCAA Section 6.3.3.6.7 #3 has been clarified as follows:

"All watercourse crossings and cross drains will be installed and functional prior to October 15th. In addition, by October 15th, all waterbars, rolling dips, and road and landing construction associated with straw mulching and grass seeding will be completed in order to minimize suspended or mobilized sediment delivery to a watercourse."

Response to Comment S1-76

AHCP/CCAA Section 6.2.3.8.5 #2 says, "All exposed areas associated with the crossing..." This means any area associated with the crossing that could produce sediment delivery to a watercourse. The Services believe that this prescription is sufficiently explicit for water quality protection and enforceability.

Response to Comment S1-77

In the timber industry in California, the term "patch (spot)" rocking is understood to refer to a limited site like a pothole or soft spot in an otherwise stable road surface. Patch or spot rocking of an otherwise stable road surface is included with other road and erosion control facility maintenance activities listed in this section that are not expected to cause a significant physical change to the road surface, drainage or function of erosion control structures. See Master Response 14 regarding Plan enforceability.

Response to Comment S1-78

The rotating annual schedule is described in greater detail in AHCP/CCAA Section 6.3.3.8.3. The supposition by the reviewer is correct that the intent of the Routine Maintenance Areas with a Rotating Annual Schedule number 1 will be maintained in the first, fourth, seventh and so on years . The same would hold true for Road Maintenance Areas with a number 2 to be maintained in the second, fifth, eighth and so on years. When combining the all the mainline roads in the Plan Area, roads appurtenant to any THP, and roads in the particular Routine Maintenance Areas, it is estimated that approximately 45 percent of all of Green Diamond's roads will be maintained annually. At the least, all accessible secondary roads will be maintained every third year.

Response to Comment S1-79

AHCP/CCAA Section 6.2.3.9.5 #2c has been clarified as follows:

"That ditches are open and properly functioning, free of debris that could plug the ditch or culvert and cause a diversion of water onto the road surface."

Response to Comment S1-80

See response to Comment R1-114. Further, AHCP/CCAA Section 6.2.3.9.5 #2d has been clarified as follows:

"Culverts are functioning properly (i.e., the culvert is not rusted out or separated at a joint; water is flowing through the pipe and not underneath; sediment and debris is not reducing the pipe capacity)."

Response to Comment S1-81

Green Diamond's goal is to complete all sites that need maintenance before the winter period, but if the workload exceeds that which can be

accomplished in the current maintenance year, the uncompleted sites will be held over until the following maintenance year. The intent is to focus on sites with the highest priority. It should be noted that new maintenance sites the following year may have a higher priority than some sites held over from the previous year.

Response to Comment S1-82

Emergency inspections are intended to provide a quick look at the road system to find potentially major problems during or immediately following a "significant storm event". The intent is also to be able to fix any problem sites as they are found so the inspections would be primarily limited to those roads that are accessible by maintenance equipment. Fortunately road inspectors become familiar with roads within their area and tend to know which roads will likely need maintenance. This may include roads that would be accessible only by ATVs, however the repair of these sites may not occur until the following summer's road maintenance period.

Response to Comment S1-83

Comment noted. If applicable law requires Green Diamond to perform the Plan's daylighting activity only in concert with a THP, then Green Diamond would be required to obtain one for that work.

Response to Comment S1-84

The term 'daylighting' is defined in AHCP/CCAA Section 10.2.

Response to Comment S1-85

The conservation measures included in the Operating Conservation Program (AHCP/CCAA Section 6.2) apply to employees, contractors and permittees of Green Diamond. 'Permittees' include woodcutters, hunters, holders of conditional rights-of-way, etc. Green Diamond has a security department that works year-round to discover and prevent unapproved use of Green Diamond's property. To the extent that the security department is successful in prevention of unauthorized access to Green Diamond's property, adverse impacts to covered species and their habitats are avoided.

With respect to use of ATVs by Green Diamond biologists, those individuals are bound by all of the Plan's prescriptions, including AHCP/CCAA Section 6.2.3.11.4.

Response to Comment S1-86

The Services believe that this attribute is possible to achieve because the limitations on ground disturbing activities relating to site preparation activities would be accomplished by compliance with AHCP/CCAA Sections 6.2.4.2.3 and 6.2.4.2.4.

Response to Comment S1-87

AHCP/CCAA Section 6.2.4.2.6 has been revised as follows:

"All firelines that are not in an RMZ or EEZ will have drainage facilities adequate to prevent the delivery of sediment to RMZs or EEZs."

Response to Comment S1-88

As indicated in AHCP/CCAA Section 6.2.4.2.7 #3, the intent is to allow tractors to construct firelines on short pitches that exceed 50 percent as long as they are not over 100 feet in length and as long as there is no likelihood that the fireline location could cause sediment delivery to a RMZ. Firelines commonly are constructed on ridgeline locations. On a ridgeline where slopes are generally less than 50 percent, it is not uncommon to encounter short pitches that exceed 50 percent. This section also intends to allow for fireline construction by tractors on short pitches that exceed 50 percent as long as there is no jeopardy to water resources.

Response to Comment S1-89

AHCP/CCAA Section 6.2.4.5.1 #2 incorrectly characterizes the use and construction of skid trails from May 1st to May 15th or

S1-85 be a problem, given the need to cover extensive areas of the non-rocked road system to conduct NSO and other species surveys.

S1-86 6.2.4.2.5 #3 Is this standard possible to achieve while achieving the intent of site preparation?

S1-87 6.2.4.2.6 Per the Forest Practice Rule definitions, "drainage facilities" should be used instead of "drainage structures."

S1-88 6.2.4.2.7 #3 Is the intent that if there is a pitch greater than 50% slope that is shorter than 100 feet, the tractor is permitted to build fireline on it? This should be clarified.

S1-89 6.2.4.5.1 #2 Why is the qualifier "on existing skid trails" used for the time period when skid trail construction is permitted per section #1, and skid road construction specifically excluded? This section is unclear and needs re-writing.

S1-90 6.2.4.5.1 #2a The word "in" appears to be a typo.

S1-91 6.2.4.5.1 #2c "at last 100 feet" appears that it should be "at least".

S1-92 6.2.4.5.1 #2f There is no open parentheses for the close parentheses found at the end of the paragraph.

S1-93 6.2.4.5.2 Why is the qualifier "that require constructed skid trails" included? What has been excluded from this limitation? It appears that tractor yarding is being favored over road building (to gain yarder access). Is this the intent? It might be better to describe a balance point related to length of new road, steepness of slopes for tractor yarding and for road building, how much area the new road would make feasible for cable yarding as opposed to tractor yarding, and any other criteria pertinent to the evaluation.

S1-94 6.2.4.6 #2 If the area was tractor yarded before, and there are skid trails that need repairs, but the area is cable yarded in the current entry, is the intent to open the skid trail just to fix them, or are they to be left alone? This should be stated for clarity and enforcement.

S1-95 6.2.5 Will monitoring results be available? To who? In what format? Who is enforcing the monitoring requirement? How? What is in the annual monitoring reports? Who gets them?

S1-96 6.2.5 In the first sentence, it appears that the word "effectives" should have been "effectiveness".

S1-97 6.2.6.1.3 #1b What exactly is meant by less than 70% effective? How is this measured? 70% of what? Is this compared to current (2002) conditions? Are those numbers already

October 16th to November 15th. Green Diamond can use, construct and reconstruct skid trails from May 15th through October 15th. The use of the skid trails (excluding skid trail construction and reconstruction) can be extended to include the periods May 1st to May 15th or October 16th to November 15th when certain procedures are followed. AHCP/CCAA Section 6.2.4.5.1 #2 has been clarified as follows:

"Ground-based yarding with tractors, skidders, and forwarders may occur from May 5 through October 15 ~~on existing skid trails~~. ~~This period of s~~Skid trail use (~~which~~ exclude~~s~~ing skid trail construction and reconstruction ~~of skid trails)may~~ can be extended to include the periods May 1 to May 15 or October 16 to November 15 when the following procedures are followed:"

Response to Comment S1-90

AHCP/CCAA Section 6.2.4.5.1 #2a has been revised as follows to delete the extra word:

"Skid trail use ~~will be carried out~~ during this period ~~so as to~~ will not ~~cause in a visible increasein turbidity in watercourses or~~ result in visibly turbid water that flows into hydrologically connected drainage facilities, ~~which~~ or discharges directly into watercourses, seeps or springs."

Response to Comment S1-91

AHCP/CCAA Section 6.2.4.5.1 #2c has been clarified as follows:

"Use of skid trails during the period will not occur within at least 100 feet, slope distance…"

Response to Comment S1-92

The parenthesis ")" at the end of AHCP/CCAA Section 6.2.4.5.1 #2f was a typo and has been deleted:

"….provided there is no greater than a 30 percent chance of rain forecasted by the National Weather Service within the next 24 hours."

Response to Comment S1-93

The qualifier, "that require constructed skid trails," allows for the construction of specifically flagged and located skid trails on slopes over 45 percent would only be utilized where other roading and yarding options were assessed and exhausted because of unacceptable increased ground disturbance. The qualifier " unless greater soil or riparian zone disturbance …" is provided for the rare circumstance where access for alternative harvesting on steeper ground is significantly more impactive than allowing for ground based equipment to operate and reach logs in these isolated situations. The general practice is to confine conventional tractor skidding operations, with the associated ground disturbance from skid trail excavation and blading of the ground, to slopes 45 percent and less.

Response to Comment S1-94

AHCP/CCAA Section 6.2.4.6 #2 addresses problem sites. The remedy for problem sites will vary depending on the site, its location in relation to a watercourse, resources at risk, and impacts associated with abating potential problems. As stated in AHCP/CCAA Section 6.2.4.6 #1, problem sites will be identified and evaluated by professionals experienced in the resources at risk. If repairs would involve operations in a Class I or II watercourse, a Streambed Alteration Agreement (under Pub. Res. Code section 1603) with CDFG would be required. If the reviewing professionals determine that the benefits of a specific repair activity would outweigh any negative impacts associated with opening up an old skid trail, the decision will likely be to make the repair. Since this section is referencing issues within a THP area, any proposed activities would have to be included in the THP, which would be reviewed by a multi-disciplinary team and subject to approval by CDF as the Lead Agency in the THP approval process. See also Master Response 14 regarding Plan enforcement.

Response to Comment S1-95

The details of the monitoring program, including the availability of monitoring results, reports and enforcement, are included in AHCP/CCAA Section 6.3.5 and Appendix D.

Response to Comment S1-96

"Effectives" was a typographical error and AHCP/CCAA Section 6.2.5 has been corrected as follows:

"*Effectiveness monitoring measures include four categories of projects and programs*…."

Response to Comment S1-97

As described in Appendix D, section D.3.4, the Plan proposes the SSS conservation measures to be 70 percent effective at preventing management-related sediment delivery from landslides compared to that from appropriate historical clear-cut reference areas. A maximum of a 30 percent relative increase in landslide-related sediment delivery compared to merchantable sized, advanced second growth or uncut SSS areas may be used as another comparative standard to determine the effectiveness of the conservation measures. The effectiveness will be determined by comparative analysis of cumulative sediment delivery volumes and associated data. Section D.3.4 also describes some of the fundamental elements of the assessment procedure and the general qualifications of the supervising professionals and review panel. See Appendix D, section D.3.4 regarding the description of the SSS Assessment.

Response to Comment S1-98

The interim riparian reserves of the NWFP *(*Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl, Attachment A--*Standards and Guidelines for Management of Habitat for Late-Successional and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl*), which delineate buffers along rivers, streams and other riparian areas and provide other measures to protect or improve aquatic and riparian habitats, are available online: <http://www.or.blm.gov/ForestPlan/newsandga.pdf>. Because these measures are available from the U.S. Forest Service, they will not be included as an addendum to the Plan.

Response to Comment S1-99

See Master Response 15.

Response to Comment S1-100

The term "status" encompasses a variety of information that may be available about various watercourses (e.g. watercourse classification, presence of amphibians, presence of fish, anadromous or resident species, location of monitoring sites, etc.). AHCP/CCAA Seection 6.2.7.1 #4 has been clarified as follows:

"*During THP development, if there is any uncertainty about the appropriate status of streams (e.g., watercourse classification, presence of amphibians, presence of fish, anadromous or resident species, location of monitoring sites, etc.), or the existence of…*"

S1-97 developed? Where are they? Are the numbers going to be developed later? How? What parameters will be used? Or is this a subjective 70% ("in the opinion of two of the three experts")? If it is subjective, it is arguable and unenforceable.

S1-98 6.2.6.2 #1 What are the "interim Northwest Forest Plan riparian measures" and where are they found? Are they included as an addendum? If not, they should be for future reference.

S1-99 6.2.6.3 The reserve account section is very confusing. It is unclear how this is actually used, what it's function is, what constitutes a debit or a credit, or how the FSAs are converted to road management prescriptions. Are acres that would otherwise be preserved harvested to pay for road work? Does retaining a certain number of acres relieve Simpson of the requirement to do a certain amount of road work? Where are these acres (ridge top, adjacent to a WLPZ, in a Class III EEZ)?

S1-100 6.2.7.1 #4 Does the "status" of streams mean Classification, or condition, or something else?

S1-101 6.2.9.5 RF (second to last sentence) appears to be a typo.

S1-102 6.3.1.1 (page 6-65, last sentence) "RMZs and CMZs are defined in Section 6.3.1." It should reference 6.3.1.4.1 (ref: page 6-73).

10.2 Definitions

S1-103 Bankfull channel width: what is meant by most pronounced bank? Is that the vegetated bank? Is it beyond the flood plain? This definition needs clarification.

S1-104 Before-After-Control-Impact (BACI): what is meant by "non-parallelness"? This does not clarify BACI.

S1-105 Cable yarding: this definition is not very clear, the definition in the EIS is better.

S1-106 Canopy closure: this definition is entirely unclear, the definition in the EIS is better.

S1-107 Channel bank failure: is debris slide the appropriate term to define this? Could there be other types of failures of the channel bank? Why limit the definition to debris slides? Is there an existing accepted definition that could be used?

S1-108 Channel migration zones: this definition depends on the definition of bankfull channel, which is discussed above. Without that, it is difficult to determine if this definition is appropriate. However, this definition does not appear correct, and is unclear. The EIS definition appears clearer.

Response to Comment S1-101

Comment noted. See response to Comment R1-136 for the correction.

Response to Comment S1-102

In reviewing this comment, the Services discovered that the reference to "RMZ" in this sentence should be "floodplain." Accordingly, the last sentence of the first paragraph of AHCP/CCAA Section 6.3.1.1 has been revised as follows:

"~~RMZs~~Floodplains and CMZs are defined in Section 6.3.1.4.1."

Response to Comment S1-103

The most pronounced bank is the point at which the stream would just fill the channel to the top of the banks and begin to flow out onto the floodplain. An alder tree line often marks the bankfull point although other vegetation can be found below this point. The definition of "bankfull channel width" in AHCP/CCAA Section 10.2 has been clarified as follows:

"Channel width between the tops of the most pronounced bank on either side of a stream reach where water would just begin to flow out onto the floodplain."

Response to Comment S1-104

The term "non-parallelness" has been removed from the definition to avoid confusion. However, non-parallelness refers to the analysis that is done to determine if the relationship of the response variable(s) between the control sites differs following the treatment. If the response variable(s) between the treatment and control sites differ, then the responses were non-parallel. The definition of "Before-After-Control-Impact (BACI)" has been modified in AHCP/CCAA Section 10.2 as follows:

"*An experimental approach that utilizes a paired design with treatment and control sites. Data are collected from both experimental sites before and after the treatment and an analysis is done to determine if the relationship of the response variable(s) between the treatment and control sites differs following the treatment.*"

Response to Comment S1-105

The definition of "cable yarding" included in AHCP/CCAA section 10.2 has been replaced with the definition included in the EIS.

Response to Comment S1-106

The definition of "canopy closure" included in AHCP/CCAA Section 10.2 has been replaced with the definition included in the EIS.

Response to Comment S1-107

Other types of landslides than debris slides may define channel bank failures, however debris slides of relatively limited size are very common in this setting. This definition is not necessary in the glossary and has been deleted.

Response to Comment S1-108

The definition of "channel migration zones" included in AHCP/CCAA Section 10.2 has been replaced with the following for clarification:

"Current boundaries of bankfull channel along the portion of the floodplain that is likely to become part of the active channel in the next 50 years. The area of the channel defined by a boundary that generally corresponds to the modern floodplain, but may also include terraces that are subject to significant bank erosion."

Response to Comment S1-109

The inclusion of domestic water supplies was inadvertently omitted from the definition of a Class I watercourse. The definition of "Class I watercourses" in AHCP/CCAA Section 10.2 and AHCP/CCAA Section 6.3.1 has been revised as follows:

"All current or historical fish-bearing watercourses and domestic water supplies within 100 feet downstream of the intake."

The word "historical" in the definition of Class I watercourse relates to fish use or presence within the watercourse in the past. There was no time frame given as to when the stream had fish but presumably the persistence of resident fish within a stream, above the point of anadromy, would depend on their survival during extreme drought conditions.

Response to Comment S1-110

The definition of "clearcutting" in AHCP/CCAA Section 10.2 refers to even-aged management of forests. In AHCP/CCAA Section 2.4, the description of the harvesting methods clearly relates the clearcut silvicultural method to the practice of even-aged management. In addition, the text goes on to describe what the clearcutting method includes in greater detail than just a definition. However, the definition of "clearcutting" in AHCP/CCAA Section 10.2 has been revised as follows:

"~~Harvest/regeneration method using even-aged management of forests.~~ Even-aged regeneration method where all the merchantable trees in the stand are removed in one harvest.

S1-109 Class I watercourse: this should include domestic water supplies within 100 feet downstream. Also, what is meant by historic? Is there a time limit on when the watercourse might have had fish?

S1-110 Clearcutting: there is more to clearcutting than even-aged management. It is expected to include removal of all trees on the site, conifer and hardwood, and usually will include artificial regeneration.

S1-111 Degradation (stream): this is an unusual use of this term. More commonly it is used to mean reduction of quality, especially relative to habitats. Degradation is used in the definition of "harm" and "take" in this alternative meaning. Both uses should be included in the definition.

S1-112 Dominant tree: this crown class receives light partly from the sides, as opposed to comparatively little, as described in the definition. It is the co-dominant tree which receives comparatively little from the sides. It appears that this definition was inaccurately used for both dominant and co-dominant trees.

S1-113 Fine sediment: it appears that "salt" should have been "sand".

S1-114 Fish-friendly structure: does this include all life stages and at all flows? If that is the intent, it should be stated. If not, the limitations should be stated.

S1-115 Harvesting: it is unclear what is meant by produce. Is this all the forest management (planting, thinning, etc) that is conducted to grow the stand of trees, or just the felling and bucking? This definition needs to be clarified.

S1-116 Headwall swales: Class 3 should read Class III.

S1-117 Historically active landslide scarp: what is meant by documented? What is this excluding from the definition?

S1-118 Hot-logging: this refers us to hot-loading, which isn't defined.

S1-119 Hydrographic area / hydrologic unit: what is the purpose of differentiating between these? Why not differentiate between an HPA that is a fraction of a watershed, and one that is multiple watersheds? Why have the two different words, that both describe an HPA?

S1-120 Hydrographic planning area (HPA): this is circular defining – HPA defines hydrographic area and hydrologic unit, and these define HPA. This definition is unclear and needs to be revised.

Regeneration is accomplished by natural or artificial means."

Response to Comment S1-111

The Services disagree. For the purposes of the Plan, the Services believe that the definition for degradation (stream) is appropriate.

Response to Comment S1-112

The definition of a "dominant tree" has been revised as follows:

"A tree whose crown extends above the general level of the main canopy of even-aged stands or, in uneven-aged stands, above the crowns of the tree's immediate neighbors and receiving full light from above and ~~comparatively little~~ partly from the sides."

Response to Comment S1-113

The definition of "fine sediment" in AHCP/CCAA Section 10.2 has been revised as follows:

"Sediment with particle size of 2 mm and less, including ~~salt~~ sand, silt, and clay."

Response to Comment S1-114

The intent of a fish-friendly structure is to provide upstream and downstream fish passage for all life stages of fish. The definition of "fish-friendly structure" in AHCP/CCAA Section 10.2 has been revised as follows:

"*Culvert or other structure that will provide upstream and downstream ~~fish~~ passage for all life stages of fish and not restrict the active channel flow*."

Response to Comment S1-115

The terms "harvesting" and "timber harvesting" are used interchangeably throughout the AHCP/CCAA. Both refer to the process of removing timber products from a specific harvesting area. The definition of "harvesting/or timber harvesting" in AHCP/CCAA Section 10.2 has been revised as follows:

"All ~~Those~~ activities necessary to ~~produce, harvest, salvage,~~ cut, remove and transport timber products from the Plan Area."

Response to Comment S1-116

The definition of "headwall swales" in AHCP/CCAA Section 10.2 has been revised as follows:

"*Areas of narrow, steep, convergent topography (swales or hollows) located at the heads of Class ~~3~~ III watercourses*."

Response to Comment S1-117

The word "documented" is unnecessary in the definition and has been deleted. The definition of "historically active landslide scarp" in AHCP/CCAA Section 10.2 has been revised as follows:

"Any ground crack that exhibits at least 3 inches of horizontal displacement or at least 6 inches of vertical displacement with ~~documented~~ movement within the past 100 years."

Response to Comment S1-118

Hot Logging/Loading is described in AHCP/CCAA Section 6.3.4.11. Because the terms are not common and because they are defined in the Plan itself, the Services conclude that no change is necessary.

Response to Comment S1-119

The Plan distinguishes among hydrographic planning areas (HPAs) that encompass an entire watershed where the boundaries are coterminous with watershed boundaries ("Hydrologic Unit") and HPAs that do not correspond with watershed boundaries either because they encompass multiple watersheds or only a fraction of one watershed ("Hydrographic Area"). See AHCP/CCAA Section 1.3.2.4.2. Hydrologic Units include Blue Creek, Redwood Creek, Little River, and North Fork Mad River. Hydrographic Areas include Smith River, Coastal Klamath, Interior Klamath, Coastal Lagoons, Mad River, Humboldt Bay, and Eel River.

Response to Comment S1-120

See response to Comment S1-119.

Response to Comment S1-121

The California Geologic Survey Note 50 and the CFPRs (14 CFR § 895.1) definition of "inner gorge" has been used in the AHCP/CCAA. The definition of "inner gorge" in AHCP/CCAA Section 10.2 has been revised as follows:

"*A geomorphic feature formed by coalescing scars ~~originating~~ from landsliding and erosional processes caused by active stream erosion. The feature is identified as that area beginning immediately adjacent to the stream channel below the first break in slope. Inner gorge is a subset of Steep Streamside Slopes ~~where a more or less distinct break in slope separates steeper slopes below the break in slope from lower gradient slopes above the break~~.*"

Response to Comment S1-122

The qualifier "in contact with the ground water table" is used because intermittent streams typically are sustained by ground water flow. It would be technically incorrect to use the commenter's suggested definition of "any stream that doesn't run all year" because there are other types of streams that do not run all year such as ephemeral streams. There are subtle differences between intermittent and ephemeral streams such as whether the stream is gaining (flow increases downstream) or losing (flow decreases downstream). Ephemeral streams usually only flow during a water-input event or only for a short period after.

S1-121 Inner gorge: this definition needs more. Are all situations where there is a break in slope from steeper below to less steep above an inner gorge? That is how the definition currently reads. Consider using CGS note 50 definitions for geologic terms.

S1-122 Intermittent stream: why is the qualifier "in contact with the ground water table" used? What is being excluded? Why isn't it any stream that doesn't run all year?

S1-123 Jack: this definition is incomplete, and does not provide a clear picture of what it is.

S1-124 Large woody debris (LWD): why is this limited to wood in the stream channel? What about wood that is on the ground, but not in the channel? Does it have a different word? What is it? Does wood not in the channel not have the biological value of LWD? The EIS definition includes both wood in the channel and not in the channel. Why is the source upslope? Are the channel trees that fall not LWD?

S1-125 Listed species: per section 15380 of CEQA, species which qualify for listing but have not been listed are still to be considered listed. How does this definition comply with CEQA relative to THP preparation and review?

S1-126 Mainstem: "steam" appears to be a typo.

S1-127 Permanently decommissioned roads: the definition includes roads that will be decommissioned (future tense). If a road is proposed for decommissioning, does it count for having been done, even if it isn't done yet?

S1-128 Precommercial thinning: why is the qualifier "by mechanical means" used? This can be done by hand, and often is.

S1-129 Prescribed burning: what is meant by "forest elements"? Is there something to be specified besides slash or woody debris? This sounds odd.

S1-130 Regeneration and timber stand improvement: these are two different activities, why are they lumped together? These should be separated and defined independently.

S1-131 Riparian management zone (RMZ): this is unclear. A statement of the purpose of the RMZ would help.

S1-132 Rock falls: why is the qualifier catastrophic used? Does the rock fall have to be so dramatic to qualify?

S1-133 Sediment: why does it have to be deposited in beds to be sediment? Can't it just be deposited?

S1-134 Seep: what is the volume or size limit between a seep and a spring? Are there different protections for seeps and springs, such that determining the classification is important?

Response to Comment S1-123

The definition of "jack" in AHCP/CCAA Section 10.2 has been revised as follows:

"Young salmon, usually a male, that mature precociously. The small males with mature gonads migrate upstream with other mature salmon and spawn by sneaking into redds to release sperm simultaneously with a spawning pair."

Response to Comment S1-124

The definition of "large woody debris (LWD)" in AHCP/CCAA Section 10.2 has been revised to the definition in the EIS, as follows:

"*Larger ~~diameter~~ pieces of wood ~~found within a~~ stream channels ~~derived from upslope sources, and~~ or on the ground, including logs, root wads, and large chucks of wood that provide~~s~~ important biological and physical functions ~~within stream channels~~.*"

Response to Comment S1-125

CEQA definitions will continue to apply to activities subject to CEQA, such as the Department's approval of a THP, but would not control the Plan and Federal Permits.

Response to Comment S1-126

The definition of "mainstem" in AHCP/CCAA Section 10.2 has been revised as follows:

"Principal ste~~a~~m of channel of a drainage system."

Response to Comment S1-127

The definition of "permanently decommissioned road" should refer to past tense and include only those roads that have been decommissioned. The definition of "permanently decommissioned roads" in AHCP/CCAA Section 10.2 has been revised as follows:

"Decommissioned ~~R~~roads that will not be needed for future management activities ~~that have or will be decommissioned~~."

Response to Comment S1-128

As used in AHCP/CCAA Section 2.4.4, "mechanical means" refers to the method of cutting non-crop trees from young timber stands to be treated by a precommercial thinning operation. AHCP/CCAA Section 2.4.4 describes the process of precommercial thinning including the specific operations that constitute 'mechanical means'.

Response to Comment S1-129

See response to Comment S1-158.

Response to Comment S1-130

The term "regeneration and improvement" is used in the AHCP/CCAA to describe activities that are separate from harvesting. The term appears in AHCP/CCAA Section 2.1 as a general description of forest activities and again as a heading in AHCP/CCAA Section 2.4. Within the AHCP/CCAA, these terms are always linked. The Services believe that the definition of "Regeneration and timber stand improvement" in AHCP/CCAA Section 10.2 is sufficiently clear.

Response to Comment S1-131

The definition of "RMZ" in AHCP/CCAA Section 10.2 has been revised as follows:

"~~The area on either~~ A riparian buffer zone on each side of Class I or Class II watercourses that receives special treatments to provide temperature control, nutrient inputs, channel stability, sediment control, and LWD recruitment."

Response to Comment S1-132

Rock falls are not necessarily dramatic nor catastrophic, though they can be. Upon further consideration, the Services believe that this definition is not necessary. Accordingly, it has been deleted from AHCP/CCAA Section 10.2 as follows:

~~"*Rock falls: Catastrophic failure of relatively steep rock slopes along a surface where little or no shear displacement takes place with rock debris accumulating at the toe of the slope*."~~

Response to Comment S1-133

The definition of "sediment" in AHCP/CCAA Section 10.2 has been revised as follows:

"Fragments of rock, soil, and organic material transported and deposited ~~in beds~~ by wind, water, or other natural phenomena."

Response to Comment S1-134

As provided in AHCP/CCAA Section 10.2, there are relative differences in sizes between seeps and springs that are not quantified. However, seeps and springs will receive the same protective measures as Class II watercourses under the Plan.

Response to Comment S1-135

See response to Comment S1-134.

Response to Comment S1-136

The definition of "temporarily decommissioned road" should refer to past tense and include only those roads that have been decommissioned. Accordingly, the definition of "temporarily decommissioned roads" in AHCP/CCAA Section 10.2 has been revised as follows:

"~~*Roads that are presently or will be decommissioned but may be used in the future (*~~*Decommissioned roads that may be used again in the future for management activities but (*~~*typically not for at least 20 years*~~*).*~~*"*

Response to Comment S1-137

Translational/rotational rock slides are discussed in AHCP/CCAA Section 4.2.3.2.1 as a subsection of the discussion of deep seated landslides. The term has been deleted from AHCP/CCAA Section 10.2.

Response to Comment S1-138

The definition of "undercut bank" in AHCP/CCAA Section 10.2 has been revised as follows:

"A bank that has ~~had~~ its base cut away by the water action along manmade or natural overhangs in the stream."

Response to Comment S1-139

S1-135 Spring: same concern as seep.

S1-136 Temporarily decommissioned roads: same concern as permanently decommissioned roads.

S1-137 Translational/rotational rock slide: how are these different from a deep seated landslide? The definitions do not seem to be sufficiently different that each type could be identified. Consider using CGS note 50 definitions for geologic terms.

S1-138 Undercut bank: overhands appears to be a typo.

S1-139 Watercourse transition line: this does not appear to be in compliance with the Forest Practice Rules.

EIS chapter 7 Glossary

S1-140 Basal area: it is unclear that the coverage is of tree stems, rather than tree canopy. This should be clarified.

S1-141 Class I watercourse: this definition doesn't accurately reflect the Forest Practice Rules. The "within 100 downstream of operations" applies to the domestic water supplies, and not to the fish presence.

S1-142 Commercial harvest: this indicates that the tree size is the test for commercial, rather than whether logs are actually sold. Is this the intent?

S1-143 Cull: what are the merchantable specifications?

S1-144 Dominant trees: this crown class receives light partly from the sides, as opposed to comparatively little, as described in the definition. It is the co-dominant tree which receives comparatively little from the sides. It appears that this definition was inaccurately used for both dominant and co-dominant trees.

S1-145 Early-seral: the example is unclear. What is meant by wildlife destruction in this context?

S1-146 Estuary: fee appears to be a typo.

S1-147 Fine sediment: salat appears to be a typo.

S1-148 Fish-friendly structure: does this include all life stages and at all flows? If that is the intent, it should be stated. If not, the limitations should be stated.

S1-149 Fluvial: this definition is not the most common use of this word, and is also unclear. The common use is "produced by the action of flowing water". This should be added and the

The Services acknowledge that the definition of the term "watercourse transition line" is different between the Plan and the CFPRs.

Response to Comment S1-140

The definition of "basal area" has been revised as follows:

"The cross-sectional area ~~(in square feet)~~ of a single stem, including the bark, ~~tree coverage per acre,~~ measured at breast height ~~or (~~4.5 feet above the ground~~)~~."

Response to Comment S1-141

The definition of a "Class I watercourse" in EIS Chapter 7 has been replaced as follows:

"*All current or historical fish-bearing watercourses and domestic water supplies within 100 feet downstream of the intake*."

The word "historical" in the definition of Class I watercourse relates to fish use or presence within the watercourse in the past. There was no time frame given as to when the stream had fish but presumably the persistence of resident fish within a stream, above the point of anadromy, would depend on their survival during extreme drought conditions.

Response to Comment S1-142

Merchantability is dependent on tree size, the log sizes/grades that can be manufactured from the tree, and market demands. A commercial harvest is defined in the context of the merchantability of the trees comprising a given timber stand.

Response to Comment S1-143

See response to Comment S1-142.

Response to Comment S1-144

The definition of a "dominant tree" has been revised as follows:

"A tree whose crown extends above the general level of the forest ~~main~~ canopy of even-aged stands or, in uneven-aged stands, above the crowns of the tree's immediate neighbors and receiving full light from above and partly ~~comparatively little~~ from the sides."

Response to Comment S1-145

The definition of "early seral" has been revised as follows:

"The biotic community that develops immediately following the removal or destruction of the vegetation in an area~~; an example is wildlife destruction~~. The stage in forest development that includes seedling, sapling, and pole-sized trees."

Response to Comment S1-146

The word "fee" in the definition of estuary has been changed to read *"free."*

Response to Comment S1-147

The word "salat" in the definition of fine sediment has been changed to read *"sand."*

Response to Comment S1-148

The intent of a fish-friendly structure is to provide upstream and downstream fish passage for all life stages of fish. The definition of a "fish-friendly structure" in EIS Chapter 7 has been revised as follows:

"*Culvert or other structure that will provide upstream and downstream ~~fish~~ passage for all life stages of fish and not restrict the active channel flow*."

Response to Comment S1-149

The definition of "fluvial" has been replaced with the following:

"Describes a condition that is produced by the action of a stream. Also describes a fish or plant species living in a stream or river."

Response to Comment S1-150

The definition of forest management has been replaced to conform with the Society of American Forester's *Dictionary of Forestry* (Helms, 1998), as follows:

"*The practical application of biological, physical, quantitative, managerial, economic, social, and policy principles to the regeneration, management, utilization, and conservation of forests to meet specified goals and objectives while maintaining the productivity of the forest.*"

Response to Comment S1-151

The word "tights" in the definition of harvesting rights has been changed to read *"rights."*

Response to Comment S1-152

The word "documented" is unnecessary in the definition and has been deleted. The definition of a "historically active landslide scarp" in EIS Chapter 7 has been revised as follows:

"*Any ground crack that exhibits at least 3 inches of horizontal displacement or at least 6 inches of vertical displacement with ~~documented~~ movement within the past 100 years.*"

Response to Comment S1-153

The definition of "insloping" has been replaced with the following:

"*Describes a road where the inner edges of the road surface are lower than the outer edges of the road. Consequently, runoff is*

S1-149 existing definition revised to clarify the purpose of the migration (i.e. hatch in small streams, mature in large streams, and return to small streams to spawn).

S1-150 Forest management: this is unclear. What is meant by traversing? What is meant by changing, or replenishing? The complete forestry website (forestry.about.com) has a glossary which defines forest management as "(a) Proper care and control of wooded land to maintain health, vigor, product flow, and other values (soil condition, water quality, wildlife preservation, and beauty) in order to accomplish specific objectives. (b) The practical application of scientific, economic, and social principles to forest property." It appears that the intended use of this term is how the same website defines forest practice: "Any activity that enhances and/or recovers forest growth or harvest yield, such as site preparation, planting, thinning, fertilization, and harvesting."

S1-151 Harvesting rights: tights appears to be a typo.

S1-152 Historically active landslide scarp: what is meant by documented? What is this excluding from the definition?

S1-153 Insloping: this definition is inaccurate. It should refer to the road, rather than the runoff. The definition for outsloping is good, and could be used as an example.

S1-154 Intermittent stream: why is the qualifier "in contact with the ground water table" used? What is being excluded? Why isn't it any stream that doesn't run all year?

S1-155 Listed species: per section 15380 of CEQA, species which qualify for listing but have not been listed are still to be considered listed. How does this definition comply with CEQA relative to THP preparation and review?

S1-156 Mid-seral: this period appears to end when the stand first reaches a merchantable size. Late-seral appears to begin with maturity. There is a significant period in between the two, but a word is not included in the glossary for this seral stage.

S1-157 Old-growth: does a stand have to have a multi-species composition to qualify as old-growth?

S1-158 Prescribed burning: what is meant by "forest elements"? Is there something to be specified besides slash or woody debris? This sounds odd.

S1-159 Riffle: does the substrate have to be exposed to qualify as a riffle? Can the water be deep enough over a riffle that the substrate is not exposed, and the area still be a riffle for the purposes of describing habitat?

S1-160 Riparian slope stability management zone: RMZ and SMZ are used to define this term, but are not themselves defined. They need to be included in the glossary.

directed into an "inside" ditch between the road surface and the adjacent uphill sideslope."

Response to Comment S1-154

The definition of "intermittent stream" has been revised as follows:

"*A stream ~~in contact with the groundwater table~~ that flows only at certain times of the year and/or when it receives water from springs or from surface sources. It ceases to flow above the streambed when losses from evaporation or seepage exceed the available streamflow*."

Response to Comment S1-155

CEQA definitions will continue to apply to activities subject to CEQA, such as the Department's approval of a THP, but would not control the Plan and Federal Permits.

Response to Comment S1-156

The definition of "mid-seral" has been revised as follows:

"The period in the life of a forest stand from crown closure to first merchantability, usually at 8 inches dbh. Brush, grass, or herbs rapidly decrease in the stand due to stand density."

Response to Comment S1-157

The definition of "old-growth" has been revised as follows:

"A forest stand with moderate-to-high canopy closure; a multi-layered~~,~~ ~~multi-species~~ canopy dominated by large overstory trees; a high incidence of large trees with large, broken tops, and other indications of decadence; numerous large snags; and heavy accumulations of logs and other woody debris on the ground."

Response to Comment S1-158

The definition of "prescribed burning" has been revised as follows:

"Introduction of fire under controlled conditions to remove unwanted brush, logging slash, and/or woody debris or specified forest elements."

Response to Comment S1-159

The definition for "riffle" has been replaced with the definition from AHCP/CCAA Section 10.2, as follows:

"A stream segment characterized by swiftly flowing water with surface agitation and having bars of deposited sediment. Riffles typically occur in areas of increased channel gradient where hydraulic conditions sort transported sediments (gravel, cobble, and boulders)."

Response to Comment S1-160

A definition for "riparian management zone (RMZ)" has been added to DEIS Chapter 7 (Glossary) as follows:

"*A riparian buffer zone on each side of a Class I or Class II watercourse that receives special treatments to provide temperature controls, nutrient inputs, channel stability, sediment control, and LWD recruitment*."

The following terms and their definitions have also been added to EIS Chapter 7 as follows:

"*Slope stability management zone (SMZ) - The outer zone of an SSS zone*."

"SSS zone - The area in which default prescriptions for SSS will be applied; consists of an inner zone (the RSMZ) and outer zone (the SMZ)."

"*Steep Streamside Slopes (SSS) - Steep slopes located immediately adjacent to a stream channel, defined by: (1) a minimum slope gradient leading to a Class I or Class II watercourse, (2) a maximum distance from a Class I or Class II watercourse, and (3) a reasonable ability for slope failures to deliver sediment to a watercourse.*"

Response to Comment S1-161

The definition of a "seep" has been replaced as follows:

"*An area of minor ground water outflow onto the land surface or into a stream channel; flows that are too small to be a spring.*"

Response to Comment S1-162

The definition of "single tree selection harvest" has been replaced as follows:

"*The selection of individual trees for harvest, where new regeneration occurs in their place and all species represented in pretreatment stands are represented post harvest where feasible. Retention standards in stands after harvest are as follows: Site I-125 square feet basal area; Sites II and III-75 square feet basal area; Sites IV and V-50 square feet basal area.*"

Response to Comment S1-163

The definition of "species of concern" has been revised as follows:

"*An informal means of referring to species listed as threatened or endangered under the Federal or State of California Endangered Species Acts, ~~formerly~~ classified as a Federal "species of concern" or State of California "species of special concern", or classified as a "sensitive species" by the California Board of Forestry~~. Categories 2 or 3; such species are no longer afforded any particular status by the USFWS under the Endangered Species Act listing process~~.*"

S1-161 Seep: does the water have to form a pool in order to be a seep? What if there is enough water to fill interstitial spaces, such that habitat is created, but a pool is not formed on the surface?

S1-162 Single-tree selection harvest: this definition is incomplete. The definition in section 10.2 is better.

S1-163 Species of concern: this term is used in several other contexts, and such species may in fact be afforded some protections in these other contexts. This definition should clarified and / or expanded.

S1-164 Translational/rotational rock slide: how are these different from a deep seated landslide? The definitions do not seem to be sufficiently different that each type could be identified. Consider using CGS note 50 definitions for geologic terms.

S1-165 Watercourse transition line: this does not appear to be in compliance with the forest practice rules.

S1-166 The EIS definitions and the HCP 10.2 definitions are not always the same, but should be. The following words are defined differently and should be reconciled.
Anadromous
Cable yarding (10.2) or cable logging (EIS) make the same and use the same definition.
Canopy closure
Class I, II, and III watercourses
CMZ
Co-dominant tree
Debris flow
Dominant tree
Drainage (EIS) or drainage area (10.2)
EEZ
Embeddedness
Evapotranspiration
ESU, also, evolutionary (EIS) or evolutionarily (10.2)
Floodplain
Harm
HPA
Hydrologic unit
Incidental take permit
Inner gorge
LWD

Response to Comment S1-164

The definition of a “translational/rotational rock slide” has been revised as follows:

“A subset of deep-seated landslides. Landslides that occur by movement of a relatively intact slide mass with a relatively deep failure plane extending below the colluvial layer into the underlying bedrock.”

Response to Comment S1-165

See response to comment S1-139.

Response to Comment S1-166

Inconsistencies between the EIS and AHCP/CCAA definitions have been reconciled.

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Response to Comment S1-167

Inconsistencies between the EIS and AHCP/CCAA definitions have been reconciled.

Pool
Precommercial thinning
Regeneration
Riffle
Seep
Silviculture
Single tree selection
Suspended sediment
Take
Watercourse
Yarding

Hydrographic area (10.2) and hydrographic region (EIS) are different words, but have the same definition.
Shallow-rapid (EIS) and shallow seated (10.2) landslides are also different words, but have the same definition.
S1-166 Streambed substrate (EIS) and substrate (10.2) have similar definitions, and appear to be intended the same.

S1-167 The following are words included in the EIS glossary, but not in 10.2 definitions. It appears that these words should be defined in both places.
Adaptive management
Age class
Alluvial
Bank stability
Basal area
Bedload
Beneficial use
Bog
Broadcast burning
Bucking
Buffer
California Forest Practice Rules
CCAA
Channel complexity
Channel migration
Commercial harvest
Confined stream channel
Cull
DBH
Dissolved oxygen

Ditch relief culvert
Down woody debris
Early seral
Edge
Element
Enhancement of survival permit
ELZ
Even aged
Even aged management
Extirpate
Fluvial
Forest fragmentation
Forest management
Geomorphic processes
Habitat
HCP
Harass
Heelboom loader
Insloping
Issuance criteria
Lacustine
Landings
Landscape
Late seral
Mass soil movement
Mature forest
Maximum extent practicable
Maximum sustained timber production
Maximum weekly average temperature
Mesic
Microclimate
Mid seral
Multi layered
NMFS
Old growth
Outsloping
Overstory
Pond
Rare
Recovery
Residual
Riparian buffer
Rookery
Rotation
Rotation age
Second growth

Response to Comment S1-168

Definitions for the following terms been added to EIS Chapter 7 (Glossary) as follows:

Before-After-Control-Impact (BACI):

> *"An experimental approach that utilizes a paired design with treatment and control sites. Data are collected from both experimental sites before and after treatment and an analysis is done to determine if the relationship of the response variable(s) between the treatment and control sites differs following the treatment."*

Boulders:

> *"Substrate particles greater than 256 mm in diameter. Often subclassified as small (256-1,024 mm) and large (>1,024 mm)."*

Breaks-in-slope:

> *"A decline in slope gradient (below the specified minimum slope gradient for the given HPA) and of sufficient distance that it may be reasonably expected to impede sediment delivery to watercourses from shallow landslides originating above the slope break."*

Clearcutting:

Selection harvest
Sensitive species
Seral stage
Shade tolerant trees
Siltation
Simpson's ownership
Site index
Site potential tree height
Special status species
Species
Species of concern
Stand
Status
Stocking level
Surface erosion sustained yield
Swamp
Terrace
Thinning
Threatened
Tractor logging
Turbidity
Understory
Uneven aged
Uneven aged management
Waterbarring
WLPZ
Watershed
Wetland
S1-167 Wheeled front end loader
Wind throw

S1-168 The following are words included in10.2 definitions, but not in the EIS glossary. It appears that these words should be defined in both places.

Adjustment area
Aerial yarding
Approach velocity
Bankfull channel width
BACI
Boulders
Break in slope
Change circumstances
Channel bank failures
Clearcutting
Covered activities
Covered species

"Even-aged regeneration method where all the merchantable trees in the stand are removed in one harvest. Regeneration is accomplished by natural or artificial means."

Covered Activities:

"Certain activities carried out by Green Diamond in the Action Area that may result in incidental take of covered species and all those activities necessary to carry out the commitments reflected in the AHCP/CCAA's Operating Conservation Program and IA."

Covered Species:

"The species identified in Table 2.2-1 of the EIS, which the AHCP/CCAA addresses in a manner sufficient to meet all of the criteria for issuing an incidental take permit under ESA Section 10(a)(1)(B) and all of the criteria for issuing an enhancement of survival permit under ESA Section 10(a)(1)(A), as applicable."

Culvert:

"Buried pipe structure that allows streamflow or road drainage to pass under a road."

Degradation (habitat):

"To degrade or lessen the habitat value of a stream. Erosional removal of materials from one place to another. Degradation lowers the elevation of streambeds and floodplains."

Early spring drying:

"The period from May 1st through May 14th where no measurable rainfall has occurred within the last 5 days and no rain is forecasted by the National Weather Service for the next 5 days."

Eleven (11) HPAs:

"The area encompassed by the eleven Hydrographic Planning Areas identified in Figure 3.3-1 and Table 3.3-1 of the EIS and described in Section 3.2.4 of the EIS."

ESP Species:

"The species for which Green Diamond is seeking an ESP from the USFWS; the species named on the ESP."

Feasible:

"Capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, operational, and technological factors, and considering what is allowable under law."

Ground-based yarding:

"Movement of logs to a landing by use of tractors, either tracked or rubber tired (rubber tired skidders) or shovels (hydraulic boom log loaders)."

Harvesting:

"All activities necessary to cut, remove, and transport timber products from the Action Area. Also see Timber Harvesting."

Hydrologically disconnected:

"Isolation of the road network such that drainage will not directly enter watercourses."

ITP Species:

"The covered species for which Green Diamond is seeking an ITP."

Landslide headscarp:

"The uppermost scarp of a landslide below the landslide crown, but above any secondary scarps; may also be referred to as crown scarp, main scarp, or primary scarp."

Landslide prone terrain:

"Potentially higher risk areas for producing shallow landslides compared to adjacent slopes."

Mainstem:

"Principal stream or channel of a drainage system."

Management roads:

"Roads that are needed to either support long-term management activities in the Action Area or provide access to timber that will be harvested within the next 20 years."

Microhabitat:

"Specific combination of habitat elements in the place occupied by an organism for a specific purpose."

Minor forest products:

"Secondary forest materials including tree burls, stump products, boughs and greenery for wreaths and floral arrangements or similar purposes."

Operating conservation program:

"Those conservation management activities which are expressly agreed upon and described in a conservation plan or its implementing agreement, if any, and which are to be undertaken for the covered species when implementing an approved conservation plan, including measures to respond to changed circumstances. In the Green Diamond AHCP/CCAA and IA, the conservation management activities and specific measures (including provisions for changed circumstances, funding, monitoring, reporting, adaptive management, and dispute resolution) as set forth in AHCP/CCAA Section 6.2."

Permanently decommissioned roads:

"Decommissioned roads that will not be needed for future management activities."

Permit or permits:

"The Incidental Take Permit (ITP) issued by NMFS to Green Diamond pursuant to ESA Section 10(a)(1)(B) or the Enhancement of Survival Permit (ESP) issued by USFWS to Green Diamond pursuant to ESA Section 10(a)(1)(A), or both the ITP and the ESP."

Plan:

"The Aquatic Habitat Conservation Plan and Candidate Conservation Agreement with Assurances prepared by Green Diamond, dated July 2002."

Plan Area:

> *"All commercial timberland acreage within eleven Hydrographic Planning Areas (HPAs) on the west slopes of the Klamath Mountains and the Coast Range of California where Green Diamond owns fee lands and Harvesting Rights (Green Diamond's ownership), during the period of such ownership within the term of the Permits, subject to the limitations described in AHCP/CCAA Section 1.3.2.3 and in the IA, and up to 100 miles of roads on lands where Green Diamond owns and exercises Road Access Rights within its approved Timber Harvesting Plan (THP) areas in the Eligible Plan Area during the term of the Plan and Permits. This is the geographic area where incidental take will be authorized, the covered activities will occur, and the Operating Conservation Program will be implemented. Except where stated otherwise in the Plan, references to lands, commercial timberlands, and Green Diamond's ownership in the context of the Plan Area include lands owned in fee and lands subject to harvesting rights."*

Registered Professional Forester (RPF):

> *"A person who holds a valid license as a professional forester pursuant to Article 3, Section 2, Division 1 of the California Public Resources Code (as in effect on the date of issuance of the Permits)."*

Rill:

> *"One of the first and smallest channels formed by surface erosion; also, a very small brook or trickling stream of water."*

Riparian Management Zone (RMZ):

> *"A riparian buffer zone on each side of a Class I or Class II watercourse that receives special treatments to provide temperature control, nutrient inputs, channel stability, sediment control, and LWD recruitment."*

Riparian vegetation:

> *"Vegetation growing on or near the banks of a stream or other body of water in soils that exhibit some wetness characteristics during some portion of the growing season."*

RMZ inner zone:

> *"The first 30 to 70 feet of the RMZ area (depending on stream class and sideslopes), as measured from the first line of perennial vegetation."*

RMZ outer zone:

> *"The remaining 45-foot to 100-foot area (depending on stream order and sideslopes) of the RMZ or the entire area extending to the edge of the floodplain from the RMZ inner zone edge."*

Run (fish):

> *"A group of fish migrating in a river (most often on a spawning migration) that may comprise one or many stocks."*

Runs (stream):

> *"Runs are stream segments characterized by swift flowing water with little surface agitation and no major flow obstructions. The substrate composition of runs usually consists of gravel, cobbles, and boulders."*

Salvage operations:

"The removal of dead trees or trees damaged or dying because of injurious agents other than competition, to recover economic value that would otherwise be lost."

SHALSTAB:

"A GIS-based slope stability computer model that delineates the relative potential for shallow landslides across the landscape. SHALSTAB identifies potential unstable areas based on both slope steepness and contributing upslope drainage area."

Size class:

"The categorization of trees into one of the following four dbh classes: seedling (<1"), sapling (1" to 4.9"), pole (5" to 11.9"), sawtimber (12" and larger)."

Slope Stability Management Zone (SMZ):

"The outer zone of an SSS zone."

Spring:

"An area of groundwater outflow onto the land surface or into a stream channel; flows are greater than a seep."

Steep Streamside Slopes (SSS):

"Steep slopes located immediately adjacent to a stream channel, defined by: (1) a minimum slope gradient leading to a Class I or Class II watercourse, (2) a maximum distance from a Class I or Class II watercourse, and (3) a reasonable ability for slope failure to deliver sediment to a watercourse."

Stream:

"A natural watercourse with a well-defined channel with distinguishable bed and bank showing evidence of having contained flowing water indicated by deposit of rock, sand, gravel, or soil."

Summer period:

"The period from May 15th through October 15th."

Temporarily decommissioned roads:

"Decommissioned roads that may be used again in the future (typically not for at least 20 years)."

Timber felling:

"Physically cutting a tree from its stump including cutting of the felled tree into predetermined log lengths."

Timber Harvesting Plan (THP):

"A plan describing a proposed timber harvesting operation pursuant to 14 CCR Section 4582 (as in effect on the date of issuance of the Permits)."

Undercut bank:

"A bank that has had its base cut away by the water action along man-made or natural overhangs in the stream."

Winter period:

"The period from October 16th through May 14th."

The following terms currently included in AHCP/CCAA Section 10.2 (Definitions) were not added to EIS Chapter 7 (Glossary) because these terms were not used in the EIS.

Adjustment Area
Aerial yarding
Approach velocity
Changed circumstances
Channel bank failures
Daylighting
Effective date
Eligible Plan Area
Hyporehic zone
Initial Plan Area
Intermediate tree
Iteroperous
Jack
Mass wasting prescription zones
Original assessed ownership
Physiographic regions
Qualifying slope break
Red light threshold
RG
Road access rights
Road daylighting
Rock falls
Semelparous
Species class
Sweeping velocity
Thalweg
Yellow light threshold

Culvert
Daylighting
Degradation (stream)
Early spring drying
Effective date
Eleven HPAs
Eligible plan area
ESP species
Feasible
Ground based yarding
Harvesting
Hydrologically disconnected
Hyporehic zone
Initial plan area
Intermediate tree
Iteroparous
ITP species
Jack
Landslide headscarp
Landslide prone terrain
Main stem
Management roads
Mass wasting prescription zones
Micro habitat
Minor forest products
Operating conservation program
Original assessed ownership
Permanently decommissioned roads
Permit/permits
Physiographic regions
Plan
Plan area
Qualifying slope break
Red light threshold
RG
RPF
Rill
RMZ
Riparian vegetation
RMZ inner zone
RMZ outer zone
Road access rights
Road daylighting
Rock falls
Run (fish)
Runs (stream)

Response to Comment S1-169

As suggested by the commenter, definitions for the following terms have been added to EIS Chapter 7 (Glossary) as follows:

Watercourse orders:

> *"The watercourse order signifies the relative position of a stream segment in a basin drainage network: the smallest, unbranched, intermittent tributaries are designated order 1; the junction of two first-order streams produces a stream segment of order 2; the junction of two second-order streams produces a stream segment of order 3, etc. However, if a first-order stream joins a second-order stream, the latter remains a second-order stream. It is not until one stream combines with another stream of the same order that the resulting stream increases by an order.*

Unconfined stream channel:

> *"Stream alignment that has a moderately high chance of migrating to significantly different locations because of low banks or lack of valley walls."*

Salvage operations
Semelparous
SHALSTAB
Size class
SMZ
Species class
Spring
Steep stream side slopes
SSS zone
Stream
Summer period
Sweeping velocity
Temporarily decommissioned roads
Thalweg
Timber felling
Timber harvesting plan
Undercut bank
Winter period
S1-168 Yellow light threshold

Additional Definitions
The following are words that should be included in the definitions.
Class II-1 and Class II-2 watercourses
Divergent slopes
S1-169 Headwater depth
Watercourse orders
Critical dips
Close proximity
Suppressed tree
Unconfined stream channel

Letter - S2. Signatory -Dept. of Conservation Calif. Geological Survey.

Subject: [Fwd: Comments for Simpson EIS & AHCP/CCAA]
Date: Mon, 18 Nov 2002 07:40:35 -0800
From: JB <james.f.bond@noaa.gov>
To: Garwin Yip <Garwin.Yip@noaa.gov>, "Swift, Richard/SAC" <rswift@CH2M.com>, Neal Ewald <NEwald@simpson.com>
CC: "Amedee Brickey (E-mail)" <amedee_brickey@fws.gov>

-------- Original Message --------
Subject: Comments for Simpson EIS & AHCP/CCAA
Date: Fri, 15 Nov 2002 15:56:24 -0800
From: "Hardin, Burt" <bhardin@consrv.ca.gov>
To: "'james.f.bond@noaa.gov'" <james.f.bond@noaa.gov>,"'amedee_brickey@fws.gov'" <amedee_brickey@fws.gov>
CC: "Bedrossian, Trinda" <tbedross@consrv.ca.gov>,"Short, William"<wshort@consrv.ca.gov>,"Marshall, Gerald" <gmarshal@consrv.ca.gov>

Please find attached to this email, our comments related to Simpson Resource Companies EIS and AHCP/CCAA. Please do not hesitate to call if you have any questions.

<<Simpson EIS_AHCP Review.pdf>>

Burt C. Hardin
Department of Conservation
California Geological Survey
Eureka, California
Telephone 707/ 441-3684

Simpson EIS_AHCP Review.pdf	**Name:** Simpson EIS_AHCP Review.pdf **Type:** Acrobat (application/pdf) **Encoding:** base64 **Download Status:** Not downloaded with message

Response to Comment S2-1

See Master Response 7 and the response to Comment J1-9 regarding the relationship between the Plan and the CFPRs.

State of California **The Resources Agency**

Memorandum November 15, 2002

To: Steve Thompson
U.S. Fish and Wildlife Service
Cottage Way
Sacramento, CA 95825

Rodney R. McInnis
National Marine Fisheries Service
501 West Ocean Blvd., Suite 4200
Long Beach, CA 90802

From: Department of Conservation, California Geological Survey

Subject: Review of July 2002, Draft Environmental Statement, Aquatic Habitat Conservation Plan and Candidate Conservation Agreement with Assurances Simpson Resource Company.

Introduction:

The California Geological Survey (CGS) is submitting this review of the Simpson Resources Company Draft Environmental Impact Statement (EIS), and Aquatic Habitat Conservation Plan, and Candidate Conservation Agreement with Assurances (AHCP/CCAA, or Plan) as part of the public comment period associated with the National Environmental Policy Act (NEPA) process. The EIS and AHCP/CCAA were prepared by CH2M Hill and by Simpson Resource Company for the USFWS and NMFS, or "Services" as defined in the EIS.

It is our understanding that the EIS and AHCP/CCAA are regional-scale, environmental and resource management planning documents that will guide Simpson's harvest operations on up to about 684,000 acres, for the next 50 years. As described in the EIS and AHCP/CCAA, the planning area is divided into eleven Hydrographic Planning Areas (HPA) that are combined into four HPA Groups based on the Plan's assessment of the regional geology and geomorphic characteristics. Consequently, the planning document is dependent, in large part, on the geology and geomorphology of the planning area.

S2-1 For this review, CGS has assumed that the California Forest Practice Rules (CFPR's) including current and future modifications to those rules will be in effect for the duration of the Plan, as stated in Section 2.2 of the EIS "under the Proposed Action, Simpson would continue to conduct timber harvesting in accordance with CFPRs..." If our assumption is incorrect, we have concerns that the Plan, as currently proposed, could be less protective than the CFPR's.

Our review of the geologic aspects of the EIS and AHCP/CCAA documents is not directed at developing alternative prescriptions for consideration by Simpson and the Services. Alternatives to the default prescriptions, as they relate to geology, will need to be determined as individual Timber Harvest Plans (THPs) are developed, and as agreed to by the Registered Professional Forester (RPF) working in the field with a Registered Geologist (RG), or Certified Engineering Geologist (CEG) in areas that have slope stability concerns. Licensed geologists and foresters will be held to the standards of practice for their individual professions through development of the Timber Harvesting

Response to Comment S2-2

See EIS section 1.3, AHCP/CCAA Section 1.4.1 and Master Response 8 regarding approval criteria for an ITP and ESP. The Services believe that Green Diamond's Plan meets these requirements. See responses to comments addressing best science issues: Comments G10-58 and G10-51 in particular, and also G10-2, G10-13, J1-8, and R1-15.

The ESA does not require that each measure included in an operating conservation program minimize impact or that an HCP provide a measure-by-measure comparison to the CFPRs. Green Diamond would remain subject to the CFPRs and all timber harvesting operations that currently require THPs and an application of the CFPRs would continue. The CFPRs have been discussed in Master Response 7.

Instead, the ESA requires that the Plan, as a whole, meet the criteria discussed in EIS section 1.3 (see also AHCP/CCAA Section 1.4.1 and Master Response 8). Where Plan measures may differ from requirements under other applicable law, Plan approval and issuance of the Permits would not excuse Green Diamond from compliance with those other laws (see AHCP/CCAA Section 1.4). Regarding application of other laws, see responses to Comments G2-17, R1-2, R1-27, and R1-44, among others.

The role of foresters and the practice of geology has been discussed in Master Response 13.

Plans under the regulations set forth in the CFPR's, and through the multi-agency review process, that is ultimately approved (or denied) by the California Department of Forestry and Fire Protection.

S2-2 Based upon our review, CGS's primary concern is that the geologic information provided in the Plan is not comprehensive enough to adequately justify the Proposed Action. Substantial concerns include: incomplete compilation and presentation of geologic data; default prescriptions that may not provide environmental protection equal to that provided by the CFPR's; geologic models have been provided and are proposed to be used that do not appear to have been properly calibrated and validated; monitoring studies and assessments are poorly documented and do not specify the use of appropriately trained personnel to perform the work, and; RPF's appear to be inappropriately encouraged to practice geology. Provided below is a summary of our comments, including some examples of our concerns.

Comments:

1. Note 52 Guidelines

The CGS, in cooperation with the State Mining and Geology Board and the State Board of Geology and Geophysicists, developed guidelines for preparation of geologic reports for regional planning documents, and published Note 52, Guidelines for Preparing Geologic Reports for Regional-Scale Environmental and Resource Management Planning, in 2001. The purpose of the note guidelines is "to provide government and private geologists and other professionals general guidance on the preparation and use of geologic studies for use in regional-scale environmental and resource management planning documents," such as the subject EIS and AHCP/CCAA.

S2-3 It does not appear that many of the items set forth in the Note 52 guidelines have been addressed by the EIS, or AHCP/CCAA document. Items of critical concern that have not been adequately addressed include: general information related to base maps and the use of aerial photography; compilation of regional geologic, land use, and hydrologic data; presentation of new geologic data; geologic report appendices; aspects of computer modeling (including sensitivity analysis, and model calibration and verification studies); and signature of professional in responsible charge.

S2-4 The north coast of California is recognized as one of the most geologically active areas of the world. The area is characterized by high seismicity, rapid tectonic uplift, weak rocks, and prolific mass wasting processes. The magnitude and scale of these processes and their effect on the environment is underrepresented in the EIS and AHCP/CCAA.

S2-5 Slope stability analysis and the resulting default prescriptions have been developed for the different HPA groups, based in part, on regional geologic information. The regional geology used for development of the prescriptions appears to have been derived, primarily, from maps prepared at the scale of 1:250,000, although the Plan maps are poorly referenced, and it is not clear what geologic information has been relied upon. These maps are not of sufficient detail to provide for meaningful analysis, or for the

Response to Comment S2-3

The mass wasting assessment described in AHCP/CCAA Appendix D, Section D.3.5 is expected follow State of California guidelines in Note 52 to the extent feasible, depending on the discretion of the supervising geologist.

Response to Comment S2-4

There are a number of statements in the EIS that note how the environment and landscape of the region is shaped by seismic activity and geologic processes. For example, EIS Section 3.2.1 notes that the

"North coastal California includes some of the most rapidly eroding areas in the United States…One fundamental reason for this occurrence is the unstable geology of the Coast Range."

The magnitude and scale of these processes have been discussed in EIS Section 3.2.2 (Regional Geology). Specifically, Section 3.2.2 states the following:

"The extensive uplift of the region is well known …Accretion, deformation and uplift of the region is ongoing today…Slip rates along the major thrust faults in the area is on the order of several millimeters per year"

In addition, EIS Section 3.2.2.3 (Seismic Hazards, Faults, and Structural Relationships) states:

"Northern coastal California and the adjacent offshore area constitute one of the most seismically active areas in the state….Several moderately active crustal faults … are located near or within portions of the Primary Assessment Area….[T]he orientations of the faults and geologic terrains often mark contacts between distinctly different rock units that, in turn, strongly influence area topography and drainage patterns. The faults that exhibit evidence of recent activity may also delineate potential geologic hazards (i.e., the occurrence of high ground acceleration rates resulting from earthquakes on nearby faults may directly or indirectly result in slope failures)."

EIS Section 3.2.2.3 provides a brief description of the active and inactive faults in the Primary Assessment Area. Further, EIS Section 3.2.2.3, in combination with Section 3.2.3.1 (Landform Development) and Section 3.2.4 (Geology, Topography, and Geomorphology of the HPAs and Rain-on-Snow Areas), provide a good representation of the high seismicity, rapid tectonic uplift, weak rocks, and prolific mass wasting processes in the Primary Assessment Area. In addition, AHCP/CCAA Section 4.2 provides the geologic and geomorphic background within the 11 HPAs.

Response to Comment S2-5

The geologic map presented in the AHCP/CCA and EIS was compiled from regional geologic maps published by the State of California, Department of Conservation, Division of Mines and Geology and the United States Geological Survey. Specifically, the maps included in the compilation geologic map include the Geologic Map of California Redding Sheet (Strand, 1962), Geologic Map of the Weed Quadrangle (Wagner and Saucedo, 1987), Geology of the Cape Mendocino, Eureka, Garberville, and Southerwestern part of the Hayfork 30' x 60' Quadrangles and adjacent offshore area, Northern California (McLaughlin and Others, 2000), and Geologic Map of the Redwood Creek Drainage Basin, Humboldt County, California (Harden and Others, 1982). Use of regional maps was necessary to include the wide geographic extent of the Plan Area. These regional maps are referenced in AHCP/CCAA Section 9. Other geologic maps were referenced during the development of the Plan, including the 1979 15-minute quadrangle compilation series by Don Ristau and the 1980's 7.5-minute series of Geologic and Geomorphic Features Related to Landsliding maps published by the Division and Mines and Geology, and they are generally consistent with the regional geologic maps. Based on this comparison, the Services believe that the regional maps are adequately accurate and reliable, and consistent with the general geologic description included in AHCP/CCAA Section 4.2.

The slope stability conservation measures are based in part on the

geologic conditions as represented on the regional maps. They also are based on empirical data and professional experience from a California RG, gained from working in various areas as described in AHCP/CCAA Section 6.3.2.

Response to Comment S2-6

Green Diamond conducted pilot studies relating to a mass wasting assessment (pilot data are summarized in both text and tables in AHCP/CCAA Appendices F1 and F3), SSS (pilot data are summarized in AHCP/CCAA Figures 6.3 and 6.4) and roads (pilot data are summarized in AHCP/CCAA Appendix F2). Although the raw data in each of these studies is not included in the Plan, it is on file with the Services. See the responses to Comments J1-19 and S2-19.

Response to Comment S2-7

The introduction of EIS Section 3.2.1 (Geology, Geomorphology, and Mineral Resources) states that the information presented in the EIS is intended to provide a broad overview of how geologic characteristics such as bedrock composition, bedrock structure, and tectonic uplift relate to topography, hillslope mass wasting, and erosion in the region. Given this approach, we believe that the EIS achieves its purpose of describing the variable geology of the Coast Range.

The statement referenced by the commenter, when read within the context of the entire paragraph (and the entirety of EIS Section 3.2), provides the reader with an understanding of the variable geology of the Coast Range. The commenter is also directed to the discussion of landform development in EIS Section 3.2.3.1 and the geology of the HPAs in EIS Section 3.2.4. Both of these sections provide discussions on the erodable nature of bedrock of the Coast

S2-5 generation of the specific mitigation techniques used in default prescriptions that would be applied at the site-specific, timber harvest plan scale.

S2-6 A number of pilot studies regarding slope stability (landslide characteristics) within specific portions of the Plan Area were apparently performed and are apparently in progress by Simpson. These pilot studies have been used to justify the Proposed Action (Section 6.0). However, none of these studies are made available as part of the Plan, therefore insufficient information has been provided for us to complete an adequate review.

S2-7 Section 3.2.2.2 of the EIS provides a general discussion of bedrock and surficial deposits in the Coast Range geomorphic province. Under the discussion of "Weathered Bedrock, Colluvium, and Soils," the EIS states, steeper slopes are "usually underlain by hard, well-cemented materials." This statement misrepresents the variable geology of the Coast Range province, and understates the significant portion of terrain underlain by weak and easily eroded bedrock (Franciscan Complex and Tertiary overlap deposits). Similarly, the discussion of "landslide deposits" in the same section appears to suggest that landslide mapping is limited to one author (Harden et. al., 1981) and to one isolated portion of the Plan Area. This statement underplays the significance of landslide processes in the development of the region and the variety of published geologic and geomorphic maps that are available from CGS and others.

S2-8 Section 3.2.3.1 of the EIS states that the "upper reaches of many drainages [in the Plan Area] have been sculpted over geologic time by repeated *shallow* landslides" (emphasis added). Section 3.2.4.2 states that the Costal Klamath Terrain is dominated by *shallow* debris slides and debris flows. In addition, Section 3.2.3.3 suggests the most prevalent landslide-prone terrains in the Plan Area are associated with steep streamside slopes, inner gorges and headwall swales. The above characterizations fall short of recognizing the variety of landslide processes in the planning area. It is well known that both shallow *and* large-scale, deep-seated landslides are responsible for the geomorphic character of the region.

S2-9 Section 3.2.2.3 of the EIS provides a limited discussion of seismic hazards and faults in the Plan Area. Several active faults trend through the Plan Area including the Little Salmon, Trinidad, McKinleyville, Mad River, and Fickle Hill faults (Peterson, 1996). The EIS does not disclose the location of faults, or the hazard of fault rupture, as it relates to the State of California Alquist-Priolo Earthquake Fault Zoning Act.

2. Landslide Definitions

S2-10 Appendix B, Table B-1 provides landslide age/activity definitions. The table is divided into three categories; "shallow-seated" landslides, "deep-seated" landslides and "general" landslides. The Plan states that the definitions are "modified" from "Cruden, 1996 #152." We assume this refers to Cruden and Varnes (1996) contribution to Special Report 247, for the Transportation Research Board. However, the terms used to define landslide age and activity is so far removed from the original reference, as to be unrecognizable. Over half of the terms introduced in the Plan are not included in the paper by Cruden and Varnes (1996), e.g., "recent," "historical," "old," "historically active,"

Range. In addition, the maps provided in this section further detail the variable geology of the Coast Range Province.

The EIS provides a level of discussion on landslides and their impact on the terrain appropriate for NEPA purposes. Attention is also directed to the first paragraph of EIS Section 3.2.3.1 (Landform Development), which notes that "at present, landslides are common throughout the Primary Assessment Area and continue to be a major force shaping the modern landscape."

Response to Comment S2-8

See response to Comment S2-7.

Response to Comment S2-9

The EIS was prepared to support Green Diamond's application for an ITP and ESP from NMFS and USFWS, respectively, relating to take incidental to the covered, forestry-related activities in Humboldt and Del Norte Counties in California. The Alquist-Priolo Earthquake Fault Zoning Act was passed in 1972 to mitigate the hazard of surface faulting to structures for human occupancy. The Alquist-Priolo Earthquake Fault Zoning Act's main purpose is to prevent the construction of buildings used for human occupancy on the surface trace of active faults. The construction of buildings to be used for human occupancy is not a covered activity under the Proposed Action.

The commenter is directed to Figure 3.2-1 in the EIS, which shows the locations of faults in the HPAs. In addition, EIS Section 3.2.4 (Geology, Topography and Geomorphology of the HPAs and Rain on Snow Areas) provides multiple references to the existence of specific faults within the individual HPAs. In addition, EIS Section 3.2.2.3 discusses the relative risks/hazards associated with faults in the Primary Assessment Area.

Response to Comment S2-10

Text has been modified to address these concerns by deleting AHCP/CCAA Appendix B and retaining in AHCP/CCAA Section 10.2 only those terms that are critical and specific to the Plan . Otherwise, usage of landslide terminology will be based on accepted professional standards.

Response to Comment S2-11

The state of landslide activity will commonly be determined based on site specific field observations of ground conditions, including the presence or absence and freshness and severity of expression of scarps and ground cracks, irregular topography including hummocky or benched ground and closed depressions, disrupted or irregular surface drainage and seepage, disrupted and leaning tree stands, and dendrochronology. Sequential historical aerial photographs also will be utilized for this purpose to the extent feasible, although small landslides often are not visible or recognizable at the scale of the available photographs. It is the Services' understanding that these predominantly qualitative methods define the current standards of practice and are considered satisfactory means for determining landslide activity state for purposes of implementing the Plan's slope stability conservation measures. However, if the standards of practice change during the term of the Permits, any RG reviewing forest management activities in the Plan Area will be expected to meet these standards, as necessary to address other applicable laws and regulations.

Response to Comment S2-12

See response to Comment S2-11.

Response to Comment S2-13

See response to Comment S2-10.

S2-10 "dormant young," or "dormant mature."

S2-11 The activity definitions proposed in the Plan for shallow-seated landslides are divided into four categories: active, recent, historic, and old. The activity classification is based solely on age, which is not possible to quantify without eyewitness accounts, or identified using time-sequenced aerial photography that closely bracket the time period of interest. In addition, geomorphic characteristics, typically used to identify *relative* landslide ages, are not included in the classification scheme.

S2-12 The Plan defines shallow-seated active landslides as currently moving and recent landslides as having experienced movement within the last one to five years. The distinction between active and recent landsliding is subtle. Without monitoring (e.g., slope inclinometers), determination between the two activity states is not possible. Default prescriptions for shallow rapid landslides are dependent, in part, on landslide activity (see AHCP/CCAA section 6.2.2.4, 6.3.2.6, and Item 10e below). Therefore, landslides that may require some form of mitigation, as defined in the Plan, could be overlooked. Additionally, the age classifications and resulting prescriptions infer that there are significant differences in stability between landslides that are "active" and landslides that are "recent" (moved one to five years ago). This is a dramatic oversimplification of the complex nature of landslide movement and resultant landslide stability.

S2-13 The definitions for "historic" and "old" shallow-seated landslides are confusing. Historic and old landslides are defined as "movement within the past 50 to 100 years" and movement "greater than 50 to 100 years old," respectively. As presented, there is a gap of 45 years between recent and historic landslide activity, and overlap between historic and old landslide activity.

S2-14 The age/activity definitions for deep-seated landslides are also problematic. Although the definitions are less dependent on absolute ages, and limited geomorphic characteristics are provided upon which to base the age determination, the definitions are not consistent with the cited literature.

S2-15 Landslide types and landslide-prone geomorphic areas are defined in the EIS under Section 3.2.3.3, in the EIS Glossary in Chapter 7, and in the AHCP/CCAA Glossary in Chapter 10. Landslides defined in the EIS include: debris flows, debris slides, deep-seated landslides, shallow-seated landslides, rock falls, translational/rotational rockslides, and earthflows. Landslide-prone geomorphic areas defined in the EIS and AHCP/CCAA include: headwall swales, inner gorges, steep streamside slopes, channel bank failures, historically active landslide scarps, and historically active landslide toes. In some cases these terms have been modified from the published literature it is referenced from, and in other cases, new terms have been presented. In one instance, the same basic geomorphic feature is defined by two different terms (e.g., translational/rotational rock slide and deep-seated landslide). In another instance, inner gorges and steep streamside slopes are characterized as being "potentially active" or "dormant" (Appendix B 3.1). Geomorphic features such as these do not have activity states, i.e., they are not landslides. The definitions provided in the EIS and AHCP/CCAA are at times contradictory to published literature, confusing and inaccurate.

Response to Comment S2-14

See response to Comment S2-10.

Response to Comment S2-15

Landslide-related terminology used in the Plan is intended to be generally consistent with accepted professional terminology. Exceptions to this standard are defined by those landslide-related terms with specific importance to the Plan that are included in the list of definitions (e.g. headwall swale, qualifying slope break). AHCP/CCAA Appendix B was deleted to accommodate this comment. Similarly, extraneous landslide-related definitions were deleted from the Plan and from the EIS Glossary (Chapter 7).

Response to Comment S2-16

The Services concur that the numerous variables in landslide processes and different geologic settings in the Plan Area cannot reasonably be anticipated for all site-specific cases. Accordingly, the slope stability measures in the Operating Conservation Program focus on landslides and selected areas with a relatively high potential to deliver sediment to the watercourses. The Services believe that these measures, when implemented during the planning process, and during site specific THP layout, with the other measures in the Operating Conservation Program, satisfy the Permit issuance criteria discussed in Master Response 8.

Response to Comment S2-17

The CFPRs have been discussed in Master Response 7. The role of foresters and the practice of geology has been discussed in Master Response 13.

Response to Comment S2-18

The Services believe that registered geologists (RGs) practicing in the context of commercial forestry will be aware of relevant guidelines, including the Guidelines for Engineering Geologic Reports for Timber Harvesting Plans - Note 45, as such guidelines are used by RGs in geologic work relating to THP preparation. Therefore, we do not see a compelling need, and the commenter does not suggest one, to provide the recommended direction in the Operating Conservation Program.

The proposed definitions will lead to confusion and disagreements in the field over the nature of observed geologic and geomorphic terrain. Default prescriptions that rely on the type of feature present would, unnecessarily become mired in debate and subjective opinion, not so much about the nature of the feature in question, but rather the meaning of the terms defined in the EIS and Plan. Clearly defined, succinct definitions, consistent with referenced published literature are needed to properly describe these geomorphic features and processes and reduce the potential for significant confusion and disagreement.

3. Default Prescriptions

The AHCP/CCAA provides recommendations for "default prescriptions" to be applied to geologic hazards, depending on Plan defined landslide hazard *area* or *type*. Areas defined by the Plan where shallow landslides are likely to occur include "steep streamside slopes," and "headwall swales." Landslide types that have been provided default prescriptions include "deep-seated landslides," and "shallow rapid landslides."

S2-16 The proposed default prescriptions rely on a broad generalization of the different landslide types and geologic conditions under which these landslides may occur. The prescriptions do not and cannot account for the numerous variables that exist for each landslide type, or area that is identified. The approach of using landscape wide, default prescriptions based on gross generalizations of geology will result in mitigations that, at times will be under-protective, and at other times over-protective. It is CGS's opinion, that default prescriptions are not geologically or scientifically valid techniques for management of site-specific geologic issues related to timber harvesting.

S2-17 The CFPRs require that individual THPs provide an explanation and justification for timber harvest operations in unstable areas, if such areas are "unavoidable," regardless of the default prescriptions. Mitigations, that are dependent on site-specific *geologic* conditions, may be necessary for timber harvest operations on unstable areas or areas that may become unstable due to various types of land management activities. Based on our review, it appears that the proposed prescriptions encourage *RPF's* to provide explanations and justifications, which under these circumstances would constitute the practice geology (see comments under Item 10 below).

S2-18 In addition, references to and recommendations for geologists to follow the Guidelines for Engineering Geologic Reports for Timber Harvesting Plans – Note 45 (CDMG, 1999), are not provided in the prescriptions. Note 45 provides a framework for the scope of investigation and documentation necessary for adequate assessment and mitigation of land management activities on potentially unstable terrain.

The following discussion of geology and geomorphic related default prescriptions is provided as an overview of some of our most significant concerns:

a. Steep Streamside Slopes

S2-19 Default prescriptions for steep streamside slopes provided in the Plan

Response to Comment S2-19

Green Diamond conducted an SSS pilot study to establish initial SSS default prescriptions, minimum slope distances and minimum slope gradients for SSS zones in each HPA to address "landslide prone" streamside slopes. See AHCP/CCAA Section 4.2.4.1 (approximately 60 percent to 90 percent of all shallow landslides in Class I and Class II watercourses initiate on steep streamside slopes); see also AHCP/CCAA Section 4.3.5.

The SSS pilot study was based on a sample of several hundred non-road-related landslide sites that were measured in the field for volume, slope gradient and size. The samples were "biased" in that the initial field inventory was directed by Green Diamond staff's knowledge of the landscape and by data from aerial photographs toward areas that revealed a relatively high concentration of recent failures. AHCP/CCAA Section 6.3.2.3.1. By focusing on areas where landsliding was known to be prevalent, the SSS pilot study results represent a conservative, or worse-than-average, landscape condition. Use of such an approach minimized the possibility that the pilot SSS study understates the slope gradient and distance, and led to the development of prescriptions capable of addressing the worst-case streamside landslide and sediment delivery conditions.

The slope gradient and distance derived from the pilot study were used to delineate the SSS mass wasting prescription zones (MWPZ) for the various HPAs, which were defined by groups of watersheds that shared generally similar physical characteristics (see AHCP/CCAA Section 4.4). Results of preliminary SSS data are summarized in Figures 6-3 and 6-4. Initial default prescriptions for SSS areas are set forth in AHCP/CCAA Section 6.2.2.1 and described further in AHCP/CCAA Section 6.3.2.3. The SSS data will be updated and the SSS gradient and slope distance for each individual HPA will be modified within the first seven years of the Plan. The effectiveness of SSS conservation measures will then be assessed after the first 15 years of the Plan. See AHCP/CCAA Appendix D.3.3.

The Services have reviewed the underlying data and, based on Green Diamond's conservative approach to collecting the preliminary SSS data, believe the data adequately support the prescriptions. See also the responses to Comments J1-19 and S2-6.

Response to Comment S2-20

Prescriptions for headwall swales were developed using the sediment delivery pilot studies and information presented in the discussion of the effects of silviculture on landsliding (AHCP/CCAA Appendix F1.2). See response to Comment S2-19 regarding the SSS pilot study and the response to Comment S5-77 regarding the mass wasting assessment pilot study. The Services believe that implementation of the Operating Conservation Program, including the prescriptions for headwall swales, meets the requirements for issuance of the ESA section 10 permits (see Master Response 8, AHCP/CCAA Section 1.4.1 and EIS Section 1.5.1.1).

Response to Comment S2-21

The Services acknowledge that landslide activity can occur throughout a headwall swale landform, depending on local site conditions. Tree selection in headwall swales will be influenced by forest stand characteristics, operational considerations related to yarding and logging, and ground conditions. Tree retention may not necessarily be emphasized within the axis of the landform. The conservation measures described in AHCP/CCAA Section 6.2.2.2 require even spacing of unharvested trees where the stand permits and that all species and size classes be represented post harvest where feasible. Trees left in the axis of the headwall swale features, while not necessarily being the failure site, have the potential to slow and possibly prevent failure material from migrating further downslope by acting as a barrier. These same

(6.2.2.1.5, 6.2.2.1.6, 6.2.2.1.7, 6.3.2.3.8, 6.3.2.3.4, and 6.3.2.4 Table 6-7) and as discussed in the EIS (4.2.3.2), are based upon pilot studies conducted by Simpson (6.3.2.3.1). The pilot studies apparently identified minimum slope gradients, maximum slope distances and cumulative sediment delivery volumes. However, the only information presented is two graphs on page 6-81 of the Plan (Figures 6-3 and 6-4). The data presented on the graphs is used to develop and justify default prescriptions within steep streamside slope areas. The Plan also states that the "preliminary landslide data collected on Simpson property reveals the bulk of sediment appears to be derived from landslides originating on the larger watercourses (Class I and Class II-2)." Data used to support this position is not presented in the Plan for review.

S2-19

Without reviewing Simpson's preliminary landslide data, or their rational for cumulative landslide delivery volumes, we are unable to evaluate the validity of the conclusions, or the appropriateness of the conservation measures that are derived from that data.

b. Headwall Swales

S2-20

Default prescriptions for headwall swales are provided in the Plan (6.2.2.2.2, 6.2.2.2.3, 6.2.2.2.4, 6.3.2.4.2, and 6.3.9.5.2) and discussed in the EIS (4.2.3.2); however, no justification for the prescriptions is provided for review.

S2-21

The Plan provides recommendations for timber harvest operations within Plan defined headwall swales, and states, "typically, tree retention should be greatest along the axis of the headwall swales, and decrease up-slope" (6.3.2.4.2). It is CGS's experience that landslide activity within headwall swales is well dispersed throughout the landform.

S2-22

In addition, Simpson intends to map the existence and location of headwall swales through computer modeling techniques (SHALSTAB) and field observations where the modeling approach does not capture a Plan defined headwall swale (6.3.2.4.1). The proposed SHALSTAB model is described by Dietrich and others (1998) for a study in Northern California's Mendocino County. Based on the author's own studies, roughly 60 percent of the shallow landslides are captured by the model at less than –2.8 q/T (the value proposed for use in the Plan).

Consequently, it appears that the Plan assumes that a capture rate of 60 percent of the headwall swales is sufficient; however, no justification is provided to support the adequacy of that rate, nor is validation provided that the model will perform similarly in the Plan Area. The report (Dietrich et al., 1998) also provides recommendations that do not appear to be incorporated into the modeling technique, including, but not limited to: the recommendation that a geotechnical review be conducted to assess the appropriate threshold values to use, and a validation study in the representative watersheds where the study is being applied. None of this information is presented in the Plan, nor does the Plan reference that these validation studies have been conducted.

trees also may provide for LWD recruitment in the event of a landslide.

Response to Comment S2-22

Prescriptions for headwall swales (AHCP/CCAA Section 6.2.2.2) are merely one part of the Operating Conservation Program (AHCP/CCAA Section 6.2). No specific landslide or headwall swale capture rate for the Plan Area is defined in the AHCP/CCAA, although 60 percent is mentioned in the context of the original Deitrich *et al.* (1998) calibration study. This is due to the fact that SHALSTAB is proposed only as a screening tool to trigger specific field verification. In addition to capture rate, Green Diamond staff will review all THPs in the field for the existence of headwall swale landforms, including outside SHALSTAB identified areas, which is expected to result in identification of virtually all headwall swale landforms on the landscape. In some respects this negates the need for a calibration study for SHALSTAB. The Services recognize that a SHALSTAB calibration study was not performed specifically for the AHCP/CCAA and that a greater log q/t value would capture a greater percentage of landslide occurrences. However, Green Diamond determined that the cost/benefit of requiring a greater log q/t value compared to that for other possible conservation measures, such as roads, was inefficient. Rather, Green Diamond elected to propose, in the AHCP/CCAA, an “off-the-shelf” use of SHALSTAB in conjunction with a suite of other conservation measures for hillslope stability and other potential sediment sources such as roads and harvest-related site disturbance.

Response to Comment S2-23

SHALSTAB modeling is proposed for use in the Plan only as a screening tool to trigger specific field verification for the presence of headwall swales. Green Diamond staff also will conduct field reconnaissance in all THP areas for headwall swales, including those located outside SHALSTAB mapped zones. Based on this incremental, comprehensive field-based approach, the Services consider it likely that most or all headwall swale landforms will be recognized and managed under this approach. Therefore, the Services believe that the proposed use of SHALSTAB in the Plan (when implemented with the other mitigation measures of the Operating Conservation Program) is sufficient for the purposes of the Plan and satisfy the Permit issuance criteria discussed in Master Response 8.

Response to Comment S2-24

See response to Comment S2-23.

Response to Comment S2-25

See response to Comment S2-23. Because the Services consider it likely that most or all headwall swale landforms will be recognized and managed under the Plan through the use of SHALSTAB, field reconnaissance and site specific geologic review, the Services believe that a calibration study is not necessary.

Response to Comment S2-26

SHALSTAB and other similar slope-based models have serious constraints. The modeling technique does not identify or map landslides – it identifies steep converging slopes based on topography where shallow-seated debris flows sometimes occur, and it is not a slope stability or risk model based on geologic parameters. The CGS has the following concerns about SHALSTAB and its use for regional-scale forest management documents:

S2-23 i. CGS testing of the model in California indicates the percent correlation of the model using default values with actual mapped debris flows and other shallow-seated failures vary from watershed to watershed. For example in an analysis conducted by the CGS, only 27% of the debris slides and debris flows in the Freshwater Creek watershed were captured by the model at a less than –2.5 q/T. This -2.5q/T is a more conservative value than that proposed for use in the Plan.

S2-24 ii. The percent correlation of the model to mapped landslides appear to be dependent upon the quality of the digital elevation models and other input data used; and in assessing landslide potential, the model is best used as a tool in conjunction with other sources of information including geologic and landslide maps, aerial photographs and field surveys.

S2-25 iii. A validation study, used to calibrate the model, has not been completed;

S2-26 iv. SHALSTAB is used to aid in the identification of a certain type of landform that is prone to shallow landslides (i.e., convergent slopes). It is not designed to identify areas prone to shallow landslides on planar or convex slopes, or where deep-seated landslides exist or are likely to occur.

S2-27 v. Appropriate data have not been provided such that we can conclude that other areas, outside of headwall swales, do not have an equal or greater likelihood for landsliding.

c. *Deep-Seated Landslides*

S2-28 Default prescriptions for deep-seated landslides are provided in the Plan (6.2.2.3.2, 6.2.2.3.3, 6.2.2.3.4, 6.2.2.3.5, and 6.3.2.5.2) and discussed in the EIS (4.2.3.2); however, no justification for the prescriptions is provided. The Plan discusses the general effects of timber harvesting on deep-seated landslides; however, the effectiveness of a default prescription across the landscape for all deep-seated landslides has not been established. In addition, the Plan assumes that the RPF has the knowledge and experience to recognize the activity state and stability characteristics of a deep-seated landslide and make the determination of when to apply the default prescription.

S2-29 Default prescriptions would lead to under-protection of the resources in some instances, and over-protection in others. In cases where the proposed default

See response to Comment S2-25.

Response to Comment S2-27

The Services acknowledge that landslides occur outside headwall swales. The mass wasting prescription zones (MWPZs) included in the Operating Conservation Program (see AHCP/CCAA Section 6.2.2.2) also address steep streamside slopes (SSS), active deep seated landslides and shallow landslides with a potential to deliver sediment. However, likelihood or existence of slope failure is only part of the criteria for determining slope stability conservation measures. Relative potential for sediment delivery is the other important criteria for determining the MWPZs described in AHCP/CCAA Section 6.3.2.2.2. See also AHCP/CCAA Appendix F3, Table F3-8: "Pre- and post-Plan sediment delivery for the Plan Area." The Services believe that this data, regarding conditions within and outside of headwall swales, and the related conservation measures are sufficient to support conclusions regarding landslide potential.

Response to Comment S2-28

The default prescriptions for deep-seated landslides (DSLs) set forth in the Operating Conservation Program (see AHCP/CCAA Section 6.2.2.3) are intended to mitigate the risk of exacerbating movement of deep-seated landslides that will likely result in accelerated delivery of sediment to the watercourse network. Where numerous scarps and ground cracks are identified, prescription zones for DSLs may overlap and form larger contiguous areas of modified harvest methods and tree retention. These prescriptions supplement RMZ prescriptions (see AHCP/CCAA Section 6.2.1) that will commonly retain trees at the toe of DSLs and along watercouses that may occupy the surface of DSLs. Such prescriptions will provide additional incremental tree retention for watercourse protection. The Services believe that these prescriptions will reduce the degee of disturbance in the area and the likelihood of management-related slope failure and sediment delivery to Plan Area watercourses.

Response to Comment S2-29

AHCP/CCAA approval and Permit issuance does not excuse Green Diamond from its obligation to comply with otherwise applicable laws, including the CFPRs. The Services believe that the default prescriptions for deep-seated landslides, together with all other measures included in the Operating Conservation Program, satisfy the Permit issuance requirements discussed in Master Response 8 and that the EIS satisfies the requirements of the National Environmental Policy Act (NEPA).

Response to Comment S2-30

The Services believe that the Plan as a whole, including the Operating Conservation Program's provisions relating to shallow rapid landslides (AHCP/CCA Section 6.2.2.4), satisfies the ESA section 10 Permit issuance criteria discussed in Master Response 8. Further, we believe that the EIS, including its discussion in section 4.2.3.2, satisfies the requirements of NEPA.

Under the Plan, default prescriptions for shallow rapid landslides will apply to only active landslides with potential to deliver sediment to the watercourse network, seeps and springs. Shallow landslides that are recognized and active or exhibit indicators of incipient movement will typically be considered active and receive either the default prescription or some alternative developed by a California Registered Geologist. See also response to Comment S2-11.

Response to Comment S2-31

The AHCP/CCAA Section 6.2.9.6 states: "If either Service or Green Diamond concludes that it is reasonably possible that management activities materially contributed to the occurrence of such a landslide, Green Diamond, at its own expense, will retain a qualified geo-technical expert to analyze the slide and develop a written report." California registered geologists, as well as California registered professional engineers, may be eligible candidates to perform the prescribed work. Such work will be performed to professional standards of practice. See Master Response 13.

S2-29 prescriptions are under-protective, i.e., less protective than the CFPRs, there is an increased risk that timber operations would result in negative impacts to the environment.

d. Shallow Rapid Landslides

S2-30 Default prescriptions for shallow rapid landslides are provided in the Plan (6.2.2.4 and 6.3.2.6) and discussed in the EIS (4.2.3.2), and include limited harvesting setbacks for Plan defined "active" landslides (see additional discussion of landslide activity under Item 2). Other landslides defined in the Plan that may require protection, including recent, historic and old landslides, are not considered. The Plan does not provide adequate justification to support the use of the proposed default prescriptions on only "active" landslides and not other landslides, which may be at their limits of stability and or may have last moved only one year ago.

e. Landslides- Supplemental Prescriptions

S2-31 The Plan indicates that Simpson will retain a "qualified geo-technical expert to analyze [a landslide] and develop a written report" when a landslide event results in sediment delivery volumes in excess of 100,000 cubic yards (Sections 6.2.9.6, and 6.3.9.6.2). The Plan does not appropriately recommend that evaluations of this nature include oversight by a California licensed geologist, or that preparation of the report should be completed under the guidelines described in CDMG Note 45 (1999).

4. Landslide Modeling

S2-32 In Appendix F, the Plan provides a discussion of the methodology, limitations and results of a modeling exercise used to estimate long-term landslide delivery rates from roads, skid trails and hillslopes to watercourses. The estimates are based on "empirical evidence" and the "best available data." Pilot studies by Simpson, and in one instance, published data by the California Department of Water Resources (CDWR) is cited as the baseline for sediment delivery volume estimates. (The CDWR study does not appear to be cited in any of the references included with the EIS or AHCP/CCAA). However, the Plan indicates that the pilot studies are incomplete, and that the published data is inaccurate. In addition, preliminary data, upon which the modeling analysis is dependent, has not been provided with the Plan for review.

S2-33 In addition, it is noted in many instances that "professional judgment" is used in the development of the model, collection and interpretation of data; however, the professional is not identified, i.e., geologist, forester, engineer, statistician, etc. It is unclear if the "professional" is appropriately qualified to assess the model, or analyze the data and make judgments regarding its validity. Under these circumstances, the results of the studies and the application of those results to land management practices cannot be properly assessed.

S2-34 References used to support the conclusions presented in Appendix F are cited in the

Response to Comment S2-32

See responses to Comment S2-19 regarding the SSS pilot study, and Comment S5-77 regarding the mass wasting assessment pilot study. The California Department of Water Resources (CDWR) report referred to is James, S., 1982 Mad River Watershed Erosion Investigation; State of California Resources Agency, Department of Conservation, Department of Water Resources, Northern District. The Services believe that the Plan and EIS are based on the best available scientific information.

Response to Comment S2-33

Regarding the professional judgment that was used to collect and evaluate pilot data and establish default prescriptions for issues related to slope stability, Green Diamond consulted with qualified registered geologists and a certified engineering geologist licensed by the State of California.

Response to Comment S2-34

A bibliographical citation list has been inserted into AHCP/CCAA Appendix F.

Response to Comment S2-35

Comment noted. The Plan was modified to provide for oversight of the SSS delineation study by a registered geologist.

See Master Response 13 regarding the role of registered geologists under the Plan.

Response to Comment S2-36

Comment noted. The SSS assessment will be conducted according to guidelines described in AHCP/CCAA Appendix D, Section D.3.4, which generally follows the methods used to collect the initial default SSS data (described in AHCP/CCAA Section 6.3.2.3.1 and the response to Comment S2-19), but may be modified as necessary in order to comply with California standards of practice. A California Registered Geologist will provide oversight for the collection and related geologic reporting of data required for the SSS assessment.

Response to Comment S2-37

The term used in the Plan is that "independent experts on the subject" will be selected for the scientific review panel. For geologic issues, this will likely include California registered geologists, but there may be some issues of an experimental nature that would best be addressed by someone in academia or other research facility that may not necessarily be a registered geologist. The goal will be to always select the most objective and qualified experts to ensure the best decisions are made to protect the resource.

text (e.g. SWS 1999; USACE 1980; USDA 1970). However, bibliographic citations are not provided, making it impossible to identify the source reference. A thorough review of the modeling techniques cannot be assessed without also reviewing the supporting references.

S2-34

5. Monitoring Programs

Several monitoring programs are proposed in the AHCP/CCAA. Of specific interest to the CGS are the geology related monitoring programs, defined as the SSS Delineation Study, SSS Assessment and the Mass Wasting Assessment (MWA). The Plan proposes to use the SSS monitoring studies to modify prescriptions within the RSMZ and SMZs of Class I, Class II-1 and Class II-2 watercourses of the 11 HPAs. As discussed under Item 3 above, it is our opinion that default prescriptions based on gross generalizations of geologic and geomorphic conditions are inappropriate, and may be, under certain circumstance, less protective than the CFPRs. In addition, all of the studies should meet or exceed the minimum standard of practice for geology, including following applicable guidelines of CDMG Notes 45 and 52 (1999, 2001), and oversight by a licensed geologist (see additional discussion under Item 3). The following is a brief discussion of the three proposed monitoring studies:

a. *Steep Streamside Slope Delineation Study*

The SSS Delineation Study is discussed in Appendix D, Section 3.3. The stated goal of the Delineation Study is to determine the maximum slope distance and minimum slope gradient for each HPA. The proposed default minimum slope gradients and maximum slope distances (6.3.2.3) are to be modified based on the results of the Study. As discussed in the Plan, the sampling design to be used in the Study has not been developed and the sampling frame upon which the design is dependent has not been set (page D-56). Without this information, we cannot assess the reasonableness of the Study to achieve its intended goals. In addition, the Plan does not provide for oversight by an RG.

S2-35

b. *Steep Streamside Slope Assessment*

The SSS Assessment is defined under Long-term Trend Monitoring/Research (6.3.5.4) and further discussed in Appendix D, Section 3.3. The goal of the Assessment is to determine the effectiveness of the SSS prescriptions and to recommend appropriate changes to the SSS conservation measures that will more closely achieve the effectiveness goal of the conservation measures (the effectiveness goals are described in the Plan). The proposed Assessment may provide valid data for evaluating the effectiveness of the conservation measures; however, the Assessment protocol is based on pilot watershed studies that have not been published for review. Consequently, we cannot assess the reasonableness of the SSS Assessment to achieve its intended goals.

S2-36

The panel proposed to review the monitoring studies is comprised of three individuals; however, no information is given as to the qualifications the review

S2-37

Response to Comment S2-38

The mass wasting assessment is intended to examine the relationships between mass wasting processes and timber management practices. See AHCP/CCAA Sections 6.2.5.3.4 and 6.3.5.4.4. Although it is not tied to specific adaptive management measures, information collected from the mass wasting assessment may be used to formulate alternative prescriptions for MWPZs. Further, that the mass wasting assessment is not tied directly to adaptive management does not preclude the results of the mass wasting assessment from being used in future management decisions, or from being used to develop subsequent HCPs or equivalent operating permits.

Response to Comment S2-39

The Washington Department of Natural Resources method was initially proposed to summarize the methods that would be used to inventory landslides in order that Green Diamond might avoid providing a lengthy description of the landslide inventory methods. The Washington Department of Natural Resources method will be modified as necessary to conform to an acceptable standard of California practice.

Response to Comment S2-40

The Plan provides an additional layer of requirements that supplement all other applicable laws (AHCP/CCAA Section 1.4). Plan approval and issuance of the Permits would not excuse Green Diamond from its obligation to comply with other governing laws, including SMARA. Therefore, when quarry operations would occur near a Class II watercourse, Green Diamond would be

S2-37

members will have. There is no assurance that relevant geologic issues will be resolved by a California licensed geologist working within his or her field of expertise.

c. Mass Wasting Assessment

S2-38

The MWA is to be used to develop statistical data associated with landslide processes as they may relate to timber management; however, the Plan points out "the results of the MWA will not be subject to the adaptive management mechanisms provided by the Plan" (Appendix D 3.5). Consequently, it is not clear how the MWA would be used to improve management practices. Note that a "scientific review panel" would be convened for the SSS monitoring studies to determine the effectiveness of the conservation measures and provide recommendations for modifications. The Plan provides for Simpson and the Services to review the results of the MWA. The goal of the review is to determine if monitoring should be continued; however, no modification to the Plan is proposed as a result of the MWA. We also note that the Plan does not provide for oversight by an RG.

S2-39

As proposed the MWA would include a landslide inventory and statistical analysis that would generally follow the procedures outline in the Washington State Department of Natural Resources (WDNR) methodology for mass wasting analysis (Appendix D, page D-58). It not clear why the WDNR methodology is proposed since it is not extensively used in Washington at the current time, and has been demonstrated to have limitations in its application in California where it has been reviewed by the CGS.

6. Quarry Operations

S2-40

The Plan provides recommendations for quarry operations. The State of California regulates surface mining operations through the Surface Mining and Reclamation Act of 1975 (SMARA). The SMARA document states, under Public Resources Code, Division 2, Chapter 9, Section 2714 (j)(1), that "excavations or grading for the exclusive purposed of obtaining materials for roadbed construction and maintenance, conducted in connection with timber operations or forest management on land owned by the same person or entity" is exempt from the SMARA requirements except when "excavation or grading that occurs within 100 feet of a Class One watercourse or 75 feet of a Class Two watercourse…" In addition, under Section 2714 (j)(2), the "exemption shall be available only if slope stability and erosion are controlled in accordance with subdivision (f) of Section 3704 and subdivision (d) of Section 3706 of Title 14 of the California Code of Regulations…" This referenced California Code describes "reclamation standards" that must be met by the landowner.

For quarries within RMZs, the Plan states that "Simpson will not use any portion of an existing rock quarry or borrow pit that is within 150 feet of a Class I watercourse, 100 feet of a Class II-2 watercourse, or 70 feet or a Class II-1 watercourse" (6.2.3.14.2, and 6.3.3.13, and EIS Sections 2.2.2 and 2.2.3.1). Based on the language in the Plan, the EIS and SMARA regulations, quarry operations adjacent to Class II-1 watercourses, that

subject to all applicable SMARA requirements. For this reason, the Services have determined not to incorporate potentially relevant reclamation plan standards into the Plan.

Response to Comment S2-41

As noted by the commenter, the analysis of potential environmental impacts associated with implementation of the Plan has been provided in EIS Chapter 4 (Environmental Consequences). Potential impacts are assessed for all action alternatives relative to the No Action Alternative, i.e., continued timber harvesting and related operations in the Action Area in accordance with existing State and Federal regulations, including the CFPRs, as they exist on July 1, 2001. As stated in the EIS, overall impacts to erosion and sediment control (EIS Section 4.2), future water quality (EIS Section 4.3), and future aquatic and riparian habitat (EIS Section 4.4) are expected to improve, or trend toward improved, conditions under the Proposed Action relative to existing conditions and the No Action Alternative.

Under the Proposed Action, Green Diamond must still adhere to all other State and Federal regulatory requirements, including the CFPRs (see Master Response 7). Plan approval and issuance of the Permits would supplement this existing regulatory regime. In other words, Plan approval and issuance of the Permits under the ESA would not excuse Green Diamond from its obligation to comply with otherwise applicable laws--Green Diamond would continue to be subject to regulatory requirements with or without the Permits. Where differences exist between proposed Plan conservation measures and the CFPRs, Green Diamond has the option of identifying these in individual THPs as in lieu practices, exceptions, or alternative practices under State forestry rules (see Master Response 7). Also, the CDF and other responsible State agencies may, on a site-specific basis and as necessary, propose prescriptions through the THP review process that exceed the protections provided by the Plan to avoid a significant adverse

S2-40 are less than 75 feet from the watercourse would be in violation of SMARA regulations. Additionally, there is no statement in the Plan that the reclamation standards described above for exempted quarry operations are incorporated into the Plan.

7. Cumulative Impacts

S2-41 The EIS provides a brief discussion of cumulative impacts as they relate to geology and the eleven HPAs (4.2.7). In this discussion, the EIS states, in effect, that its AHCP/CCAA "exceed the CFPR standards and are designed to minimize adverse geomorphic effects using various prescriptions" (EIS page 4-19). As discussed elsewhere in this review (Items 3, and 5), where the proposed default prescriptions related to geology are potentially under-protective, i.e., less protective than the CFPRs, there is an increased risk that timber operations would result in negative impacts to the environment.

8. Earthquakes

S2-42 The seismic recurrence interval is not recognized and addressed in the Plan. The Plan states that earthquakes of "magnitude 6 on the Richter scale…are not reasonable foreseeable" (Sections 6.2.9.3, and 6.3.9.3). However, review of published the report by Toppozada and others (1995) indicate that earthquakes of this magnitude occur with relative frequency within the planning area (12 earthquakes of magnitude 6.25 or greater within the last 129 years, a roughly 11-year recurrence interval). The Plan prepares should assume a magnitude 6.0, or greater earthquake could occur a number of times within the 50 year life of the proposed AHCP/CCAA.

9. Editorial

S2-43 Portions of the EIS (1.5.3.1, 1.7.1, 3.2.2 and 4.2.1) incorrectly identify the title for the Department of Conservation, California *Geological Survey*; formerly know as the California *Division* of Mines and Geology (italicized words highlight errors found in the referenced sections).

S2-44 On page 3-30 of the EIS, the document incorrectly states that the California Division of Mines and Geology (CDMG) administers SMARA regulations and that CDMG provides a listing of gas fields in the area. SMARA regulations are administered by the State Mining and Geology Board. Gas field records are maintained by the Department of Conservation, Division of Oil, Gas and Geothermal Resources.

S2-45 Regarding the EIS discussion of project scoping (Section 1.7.1), the report states that CGS attended an "informational meeting" to solicit feedback on the AHCP/CCAA. It should be noted that CGS attended the August 29, 2000 meeting in Sacramento. However, the general nature of the "information" provided at this meeting was not of sufficient detail (i.e., lacking specific details that have been provided in the referenced Draft EIS and AHCP/CCAA) to offer meaningful feedback.

10. The Practice of Geology and Registered Professional Foresters

The practice forestry and licensing of Registered Professional Foresters is regulated by

impact.

The selection of specific prescriptions is a matter of the Permit applicant's discretion (HCP Handbook at 3-19). The Services' role is to "be prepared to advise" during the development of the Plan, and to judge its consistency with the ESA approval criteria once the application is complete (HCP Handbook at 3-6 and 3-7). The ESA does not require that any particular measure be adopted or imposed, but only that its criteria for Permit issuance be met. Issuance criteria are discussed in EIS section 1.3, AHCP/CCAA Section 1.4.1, and Master Response 8. The Services believe, based on the analysis provided in the Plan and EIS, that the Plan meets ESA requirements (see Master Response 3, and the response to Comment G6-42).

Response to Comment S2-42

See response to Comments R1-135 and R1-143.

Response to Comment S2-43

References to "California Division of Mines and Geology" in the EIS have been replaced with "*Department of Conservation, California Geological Survey.*"

Response to Comment S2-44

Paragraph 6 of EIS Section 3.2.5 has been revised as follows:

"Because of their location and purpose (i.e., road construction and maintenance associated with timber harvesting and forest management), they are exempt from regulation under the Surface Mining and Reclamation Act of 1975 (SMARA) as administered by the State Mining and Geology Board. ~~California Division of Mines and Geology.~~"

Paragraph 7 of EIS Section 3.2.5 has been revised as follows:

"However, both of these fields are listed by the Department of Conservation, Division of Oil, Gas, and Geothermal Resources ~~CDMG~~ as abandoned (DOGGR, 2001)."

Response to Comment S2-45

The meeting in Sacramento on August 29, 2000 was intended to be general in nature for the purpose of soliciting preliminary feedback from agency staff for incorporation into a preliminary administrative draft version of the EIS. The formal Draft EIS was published in August, 2002, and distributed for the public comment period. The deadline for written public comments was November 14, 2002.